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THE

# POPULAR ENCYCLOPEDIA;

BEING A GENERAL DICTIONARY OF

ARTS, SCIENCES, LITERATURE, BIOGRAPHY, HISTORY,

AND

POLITICAL ECONOMY.

REPRINTED FROM THE AMERICAN EDITION OF THE "CONVERSATIONS LEXICON."

WITH CORRECTIONS AND ADDITIONS,

SO AS TO RENDER IT SUITABLE TO THIS COUNTRY, AND BRING IT DOWN TO THE PRESENT TIME.

WITH

DISSERTATIONS

ON THE RISE AND PROGRESS OF LITERATURE,
BY SIR D. K. SANDFORD, A.M. Oxon., D.C.L.

ON THE PROGRESS OF SCIENCE,
BY THOMAS THOMSON, M.D., F.R.S.L. & E., &c. &c.

AND

ON THE PROGRESS OF THE FINE ARTS,
BY ALLAN CUNNINGHAM, Esq.

VOLUME VII.—PART I.

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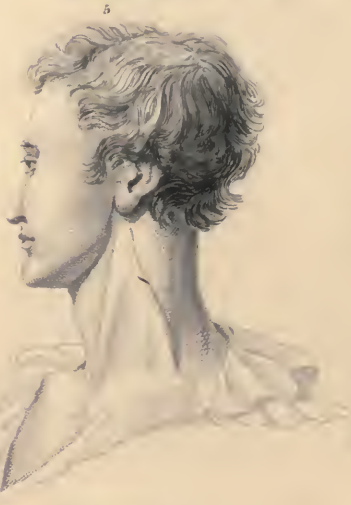

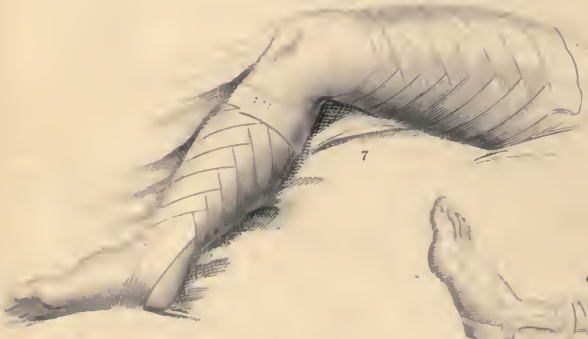

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# SURGICAL INSTRUMENTS

*PLATE LXXVII.*

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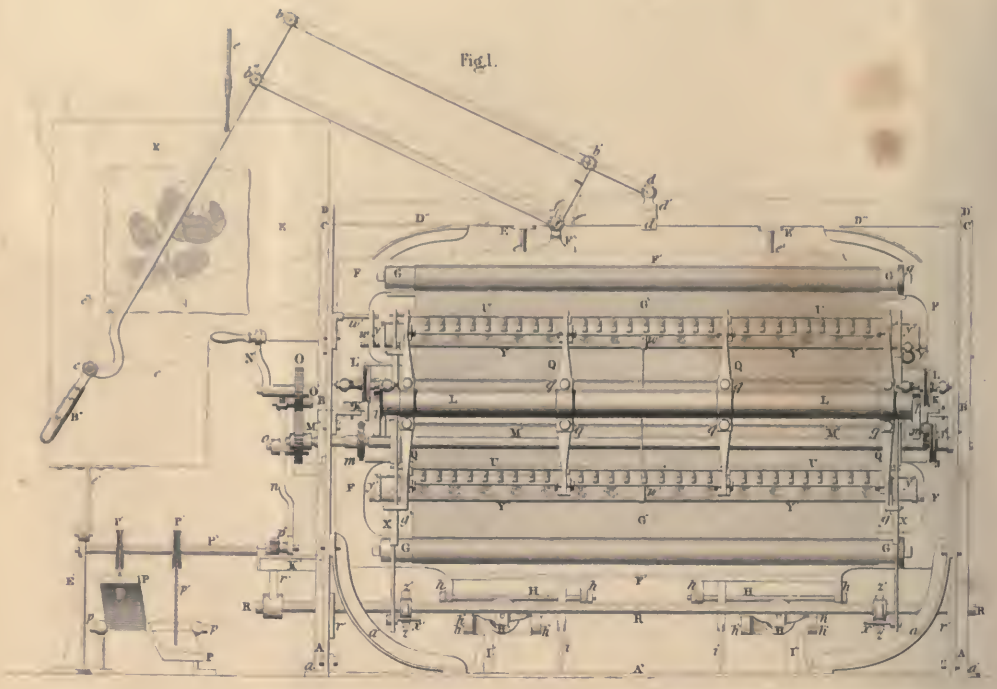
Fig. 1.



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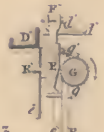

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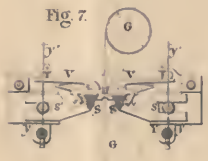

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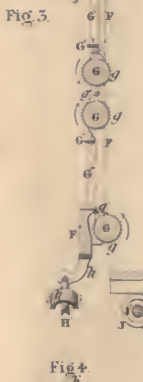

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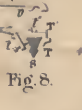
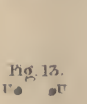


Fig. 9

Fig. 13.



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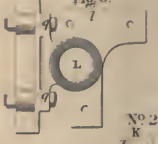
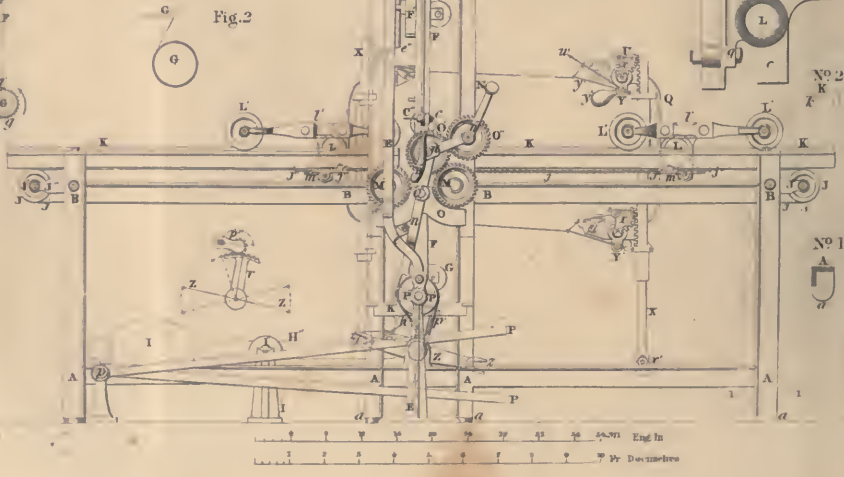


Fig. 2



No. 2

No. 1

Fig. 4.

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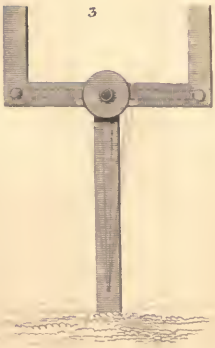
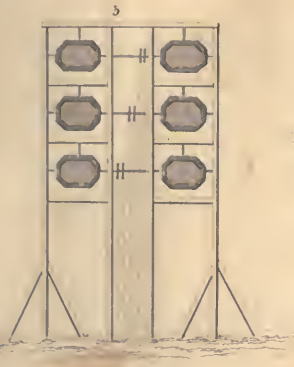
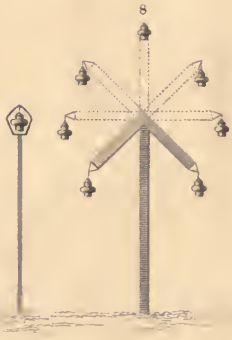
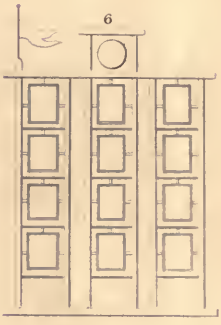
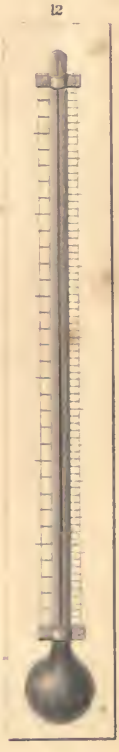
# TELEGRAPH–THERMOMETER

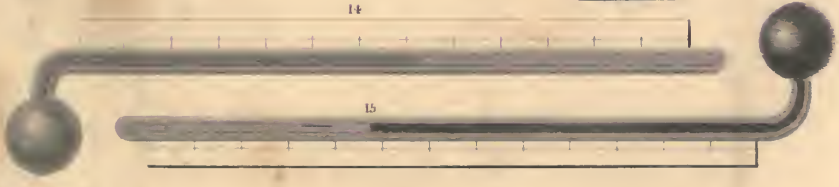


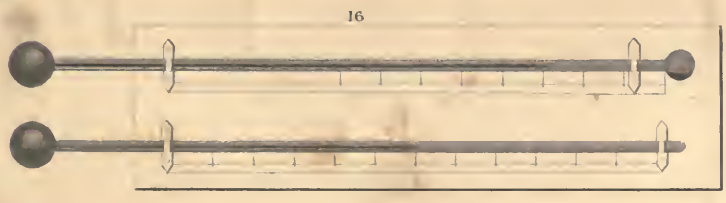





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THE

# POPULAR ENCYCLOPEDIA;

OR,

## CONVERSATIONS LEXICON.

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### WAX—WAX FIGURES.

WAX is a concrete, unctuous-feeling substance, which partakes of the nature of fixed oil. It is secreted by bees in constructing their hives, and is also, a most abundant vegetable production, entering into the composition of the pollen of flowers, covering the envelope of the plum, and of other fruits, especially of the berry of the *myrica cerifera*, and, in many instances, forming a kind of varnish to the surface of leaves. It is distinguished from fat and resinous bodies by its not readily forming soaps when treated with alkaline solutions. Common wax is always more or less coloured, and has a distinct, peculiar odour, both of which it may be deprived by exposure, in thin slices, to air, light, and moisture, or more speedily by the action of chlorine. The art of bleaching wax consists in increasing its surface; for which purpose it must be melted, with a degree of heat not sufficient to alter its quality; in a caldron so disposed that the melted wax may flow gradually through a pipe, at the bottom of the caldron, into a large wooden cylinder, that turns continually round its axis, and upon which the melted wax falls. As the surface of this cylinder is always moistened with water, the wax falling upon it does not adhere to it, but quickly becomes solid and flat, and acquires the form of ribands. The continual rotation of the cylinder carries off these rihands as fast as they are formed, and distributes them through the tub. When all the wax now to be whitened is thus formed, it is to be put upon large frames covered with linen cloth, which are supported about a foot and a half above the ground, in a situation exposed to the air, the dew, and the sun. If the weather be favourable, the colour will be changed in a few days. It is then to be re-melted, and formed into ribands, and exposed to the action of the air, as before. These operations are to be repeated till the wax is rendered perfectly white, when it is cast into cakes or moulded into candles. At ordinary temperatures, wax is solid and somewhat brittle; but it may be easily cut with a knife, and the fresh surface presents a characteristic appearance, to which the name of *waxy lustre* is applied. Its specific gravity is 0·96. At 150° Fahr., it enters into fusion, and boils at a high temperature. Heated to redness in a close vessel, it suffers decomposition, yielding products very similar to those which are procured under the same circumstances from oil. It is insoluble in water, and is only dissolved in small quantities when treated with boiling ether or alcohol. It unites by the aid of heat, in every proportion, with the fixed oils, the volatile oils, and with resin. With different quantities of oil, it constitutes the simple liniment ointment and cerate of the pharmacopœia. Wax, according to John, consists of two different substances, one of which is soluble, and the other insoluble, in alcohol. To the former the name of *cerin* has been given, and to the latter that of *myricin*. One hundred parts of wax are composed of

| | |
|---|---|
| Carbon. . . . . | 80·4 |
| Oxygen, . . . . . | 8·3 |
| Hydrogen, . . . . . | 11·3 |

See the article *Bee*.

WAX FIGURES. In ancient Greece, wax was used for impressions of seals, for encaustic painting, and for a varnish for marble walls and statues. There was also a distinct class of artists, called *puppet-makers* by the Greeks, and *sigillarii* by the Romans, who worked only, or chiefly, in wax. Figures of beautiful boys in wax, often adorned the bed-rooms of the Greeks. The subjects most frequently represented in wax, however, belonged to the vegetable kingdom, being branches, fruits, flowers, wreaths, &c. It was customary to construct a little garden of flower-pots and fruit-baskets, in every house, in honour of Adonis, at the time of his feast; but as this was celebrated so early in the year that even in Greece it was difficult to find flowers and fruits, wreaths, cornucopiæ, fruits, &c. of wax, were used as substitutes. In sorcery, also, wax figures were employed; and Artemidorus tells us, in his work On Dreams, that waxen wreaths in dreams foreboded sickness and death. The notorious Heliogabalus set dishes of wax before his guests, to tantalize them with representations of all the luxuries in which he revelled. At present wax is used for imitations of anatomical preparations, or of fruits; it also serves the sculptor for his models and studies, also for little portrait figures in *basso rilievo*. The latter can be executed with delicacy and beauty; but wax figures of the size of life, which are often praised for their likeness, overstep the proper limit of the fine arts. The attempt to imitate life too closely, which, in contrast with their ghastly fixedness, has a tendency to make us shudder. In the genuine work of art there is an immortal life, in idea, which speaks to our souls without attempting to deceive our senses. (See *Copy*.) The wax figure seems to address the mor-

tal in us; it is a petrified picture of our earthly parts. The line at which a work of art should stop, in its approach to nature, is not distinctly marked; but it cannot be overstepped without affecting us disagreeably. In Florence, all parts of the human body are, at present, imitated, in coloured wax, for the study of anatomy. More than thirty rooms, in the palace, are filled with these wax preparations; also plants are found there, imitated to deception, in wax. Exact imitations in wax, of vegetable productions, do not produce the same unpleasant emotions as wax images of men and animals, because they have, by nature, a more stationary character.

The first idea of forming figures of wax of this kind was conceived by Nones, of Genoa, an hospital physician in the seventeenth century. He was about to preserve a human body by embalming it; but, not being able to prevent putrefaction entirely, he conceived the idea of having the body imitated as accurately as possible, in wax. The abbate Zumbo, a Sicilian, who understood nothing of anatomy, but was skilled in working in wax, imitated the head of the body so perfectly, under the direction of Nones, in coloured wax, that many who saw it took it to be the real head. Zumbo secretly made another copy, and went with it to France, where he pretended to have invented the art. He soon died. De Nones then had the whole body perfectly copied by a Frenchman named De Lacroix. In 1721, La Courege exhibited similar figures in Hamburg; and, in 1737, others were publicly sold in London. The works of Ercole Lelli, Giovanni Manzolini and his wife, which were formerly preserved in the institute of Bologna, and were thence carried to Paris, were remarkably fine. Beautiful figures in wax made by Anna Manzolini, are preserved in Turin and Petersburg. She died in 1755. More modern artists in this line, in Italy, are L. Calza, Filippo Balugani, and Ferrini. The celebrated Fontana, in Florence, carried this art to a high degree of excellence. He received so many orders that he employed a large company of anatomists, model cutters, wax-moulders, and painters. Yet he generally confined himself to representations of the intestines. Vogt, in the university of Wittenberg, used, in his lectures, wax preparations, in imitation of the fine branches of vessels. Pinson, and, at a later period, Laumonier, at Rouen, distinguished themselves in this department, in France. The composition for this purpose consists of four parts wax, three parts white turpentine, and some olive-oil or hog's lard, suitably coloured. The bulk of the figure is formed with the hands: the finer parts are made with instruments of various forms: some figures are cast. The moulds ought to be of gypsum, and consist of many pieces, covered inside with oil. The wax is poured into a hole at the feet, and the whole is then thrown into cold water, that the wax may be separated the more easily. A composition, of which sculptors form their first models, consists of sixteen parts wax, two parts Burgundy pitch, or shoemaker's wax, and one part hog's lard; or of ten parts wax, one turpentine, as much shoemaker's wax, and as much hog's lard. This is melted by a slow fire, and afterwards well stirred and strained, so as to expel all the air. A composition of wax and other substances is very proper for impressions of figures cut in stones. It is prepared thus:—an ounce of virgin wax, melted slowly in a copper vessel and a drachm of sugar candy pounded well, half an ounce burnt soot, and two or three drops of turpentine. The wax is warmed if a cast is to be taken, and the stone, having been a little moistened, is pressed on it. Gem-cutters use this composition.

WAX-MYRTLE, OR BAYBERRY (*myrica cerifera*); a low, spreading shrub. The leaves are lanceolate, with a few indentures towards the extremity, and sprinkled with resinous dots. The bark and leaves, when bruised, emit a delightful fragrance. The berries are as large as a peppercorn, and, when ripe, are covered with a whitish-green wax, which is collected by boiling them: the fat then melts out, floats at the top of the water, and may be skimmed off. When congealed, it looks like tallow or wax, but has a dirty-green colour. It is therefore melted again, and refined, by which means it acquires a fine and pretty transparent green colour. It is dearer than common tallow, but cheaper than wax. A bushel of the berries will yield four or five pounds. This wax is used for a variety of purposes, but chiefly for making candles, which burn slowly and with but little smoke, emit an agreeable odour, and never melt and run down at the sides, like tallow and spermaceti; but, as they do not give a strong light, especially during cold weather, it is usual to add a portion of tallow. Such candles are a beautiful and economical article, and it is surprising they are not in more general request. A fine-scented and excellent soap, and also sealing-wax, are made from these berries. At present, however, little use is made of the bayberry, except in districts where the bushes are very abundant. It is often called *tallow-shrub*, or *candleberry-tree*. The flowers are inconspicuous, and are disposed in aments. Further information is given in the article *Myrtle-Wax*.

WAX PAINTING. See *Encaustic Painting*.

WAX, SEALING. See *Sealing-Wax*.

WEANING (of the child from its mother's breast.) The mother's milk is necessary for the new-born infant; but, after a certain period, the cutting of the teeth shows the capacity and need which the child has of receiving other sustenance. This takes place before the end of the first year. The age of twelve months, therefore, may be regarded as about the proper period for weaning. With children who are healthy, and cut their teeth early, it may take place still sooner: with weak, sickly children, it must be delayed longer, and never should be attempted during sickness or dentition. It is best for both mother and child to bring it about gradually. By so doing, the secretion of milk in the former is gradually diminished; and those complaints which arise from sudden weaning are prevented; while the child is gradually accustomed to other kinds of sustenance, and the restlessness and want of sleep, which are so troublesome in sudden weaning, are avoided. The child remains healthy and well nourished. For this, it is only necessary, that the mother should give the breast to the child less frequently, and offer it proper kinds of nourishment oftener than before. These must be, both during the weaning and some time after it, very light of digestion, and more fluid than solid: in particular, they should have no stimulating qualities, and none that will tend to create acidity, or produce other marked changes in the organic functions.

WEAPONS, See *Arms*.

WEAR; to cause a ship to change her course from one board to the other, by turning her stern to the wind. See *Ship*.

WEARMOUTH, Bishop's, and MONK WEARMOUTH. See *Sunderland*.

WEASEL (*mustela*); a natural group of carnivorous quadrupeds, recognised by the slender, elongated form of the body, and the shortness of the legs. The activity of these animals is astonishing; and their flexibility is such that they are enabled to pass through extremely narrow apertures. They run with great rapidity; and the form of their nails also permits their climbing on trees. Notwithstanding their small size, they are the most sanguinary of all beasts of prey, and seem rather to seek the blood than the flesh of their victims. They will leap upon the necks of animals even larger than themselves, and never quit their hold till satiated. Many are extremely destructive to poultry, and, when they gain access to them, commence an indiscriminate slaughter. They are nocturnal and solitary animals. Some of them take up their residence in the vicinity of habitations; others pass their lives altogether in the forests; and others, again, frequent the borders of streams. Their anatomical structure corresponds, in every respect, with their habits and disposition. The canines are long and pointed: the other teeth have cutting edges, and bear a general resemblance to those of the dog. The whiskers are long and coarse. The ears are small and rounded. There are five toes on each foot. The neck is almost as large as the head. The fur is usually composed of two sorts of hairs. The skins of such as inhabit northern climates are in great demand, and form one of the principal objects of the fur trade.

The European pole-cat (*M. putorius*), is fifteen or eighteen inches in length from the nose to the origin of the tail. The general colour is blackish-brown, paler on the sides, with white spots on the head. It lives in the vicinity of farm-houses, and is very destructive to poultry, rabbits, &c. It emits a strong and very disagreeable odour, but not at all comparable to that of the skunk.

The ferret (*M. furo*), is perhaps only a variety. The colour is yellowish, or sometimes white, with the eyes red. It is only known in the domesticated state, and is employed to drive rabbits out of their burrows. According to Strabo, it was brought originally from Africa.

The ermine (*M. erminea*), is about nine inches in length from the nose to the base of the tail; and the latter measures about four inches. In summer, the colour is chestnut-brown above, and yellowish-white beneath; and in this state, the animal is sometimes called the *stoat;* but, in winter, it is entirely pure white, with the exception of the tip of the tail, which is black at all seasons. It is fond of wild and rocky situations, and is found in all the extreme northern parts of the globe. The winter skins form a well-known article of commerce. It is very abundant in the vicinity of Hudson's bay.

The true weasel (*M. vulgaris*), is only about six inches in length to the base of the tail, and the tail an inch and a half. The upper parts of the body, as well as the tail, are clear brown, and the under parts generally white. It is found in the temperate parts of the eastern continent, and frequents the vicinity of habitations.

The mink (*M. lutreola*) is entirely of a deep-brown, except a white spot on the lower lip, which sometimes extends in a straight line to the middle of the throat. This animal lives in the vicinity of water-courses, and feeds on frogs, fish, &c.: in short, in habits and appearance, it strongly resembles the otter in miniature. The membrane which connects the toes is remarkable for its extent, which structure renders the animal better adapted for an aquatic life: accordingly, the mink swims and dives with great facility, and can remain under water for a considerable length of time. It does not, however, confine itself strictly to the water, but sometimes invades the poultry yards, when it commits as great ravages as any of the tribe. It is found throughout North America, from Carolina to Hudson's bay, and is also common in the north of Europe and Siberia.

The pine martin (*M. martes*) is nearly as large as a cat. The colour is a brilliant fulvous brown, inclining to blackish on the limbs and tail, with a large yellowish patch on the throat. It lives only in the depths of the forest, ascending trees to surprise birds and squirrels, and often occupying the nest of the latter for the purpose of bringing forth its young. It is found in the northern parts of both continents. A vast amount of the skins are annually collected in Canada. The fur is used in manufacturing hats, and is most generally preferred for ornamenting and increasing the warmth of winter dresses.

The European martin (*M. foina*) is distinguished from the preceding by a large patch of white on the throat. It appears to be confined to Europe.

The fisher, or pekan (*M. Canadensis*), is readily distinguished by its larger size, being from twenty-four to thirty inches long, exclusive of the tail, which measures from thirteen to seventeen inches. The general colour is brown, with some of the hairs grayish at the extremities. The name is an improper one, for it by no means frequents the vicinity of water, but preys on small quadrupeds, birds and their eggs, &c.: indeed, its mode of life is similar, in every respect, to that of the pine martin. It is peculiar to North America, and is found from Pennsylvania to the sixty-second parallel of latitude.

The sable (*M. zibellina*). All the preceding species have naked tubercles on the soles of the feet, but, in the sable, these parts are entirely covered with hair. The general colour of the fur is brown, more or less brilliant, with the inferior parts of the throat and neck grayish. It lives in the same manner as the pine martin, in the depths of the forest, and inhabits all the northern parts of Europe and Asia. This is the most celebrated of the tribe, not only on account of the richness of the fur, but from the horrors of the chase, carried on in the depth of winter, among mountains covered with ice, and in the deepest snows, in the coldest and most desolate regions to which man has yet penetrated. It was the search for sables which led to the discovery of Eastern Siberia. Their skins form a considerable article of commerce with the Russians.

*M. huro* of F. Cuvier is a species from Canada, having the fur almost as fine as that of the sable, and the soles of the feet covered with hair in a similar manner, but of a pale yellowish-brown colour, with the feet and tail darker. Little is known of this animal, or of the district which it inhabits. A specimen was obtained by Lewis and Clarke, during their journey to the Pacific, and is now deposited in the Philadelphia museum. According to Pallas, skins of the sable are common among the furs sent from the extreme north-western point of America to the inhabitants of the opposite angle of Asia.

WEAVING, the art of producing cloth, by the combination of flexible fibres, is performed upon a frame called a *loom*, the invention of which is attributed to the Egyptians. It has, however, received many modifications and great improvements in modern times, and is differently constructed, according to the nature of the texture to be produced. The art of weaving, both by the hand and by the power of steam or water, will be described in the Supplement to this work. Meanwhile, we give the following short summary of the processes of dressing and weaving from Bigelow's Technology.

"*Dressing.* As the threads which constitute the warp are liable to much friction in the process of weaving, they are subjected to an operation called *dressing*, the object of which is to increase their strength and smoothness, by agglutinating their fibres together. To this end, they are pressed between rollers impregnated with mucilage made of starch, or some gelatinous material, and immediately afterwards brought in contact with brushes, which pass repeatedly over them, so as to lay down the fibres in one direction, and remove the superfluous mucilage from them. They are then dried by a series of revolving fans, or by steam cylinders, and are ready for the loom.

*Weaving.* Woven textures derive their strength from the same force of lateral adhesion, which retains the twisted fibres of each thread in their situations. The manner in which these textures are formed is readily understood. On inspecting a piece of plain cloth, it is found to consist of two distinct sets of threads running perpendicularly to each other. Of these, the longitudinal threads constitute the *warp*, while the transverse threads are called the *woof*, *weft*, or *filling*, and consist of a single thread passing backwards and forwards. In weaving with the common loom, the warp is wound upon a cylindrical beam or roller. From this the thread passes through a *harness*, composed of movable parts, called the *heddles*, of which there are two or more, consisting of a series of vertical strings, connected to frames, and having loops through which the warp passes. When the heddles consist of more than one set of strings, the sets are called *leaves*. Each of these heddles receives its portion of the alternate threads of the warp, so that, when they are moved reciprocally up and down, the relative position of the alternate threads of the warp is reversed. Each time that the warp is opened by the separating of its alternate threads, a *shuttle*, containing the woof, is thrown across it, and the thread of woof is immediately driven into its place by a frame called a *lay*, furnished with thin reeds or wires, placed among the warp like the teeth of a comb. The woven piece, as fast as it is completed, is wound up on a second beam opposite to the first. Power looms driven by water or steam, although a late invention, are now universally introduced into manufactories of cotton and wool.

As the motions of the loom are chiefly of a reciprocating kind, they are produced, in some looms, by the agency of cranks, and in others by cams or wipers, acting upon weights or springs.

*Twilling.* In the mode of plain weaving last described, it will be observed that every thread of the warp crosses at every thread of the woof, and *vice versa*. In articles which are *twilled* or *tweeled*, this is not the case; for, in this manufacture, only the third, fourth, fifth, sixth, &c. threads cross each other to form the texture. In the coarsest kinds, every third thread is crossed; but, in finer fabrics, the intervals are less frequent, and, in some very fine twilled silks, the crossing does not take place till the sixteenth interval. A loom invented in the United States of America, by Mr Batchelder, of Lowell, has been applied to the weaving of twilled goods by water-power. Twilled fabrics are thicker than plain ones when of the same fineness, and more flexible when of the same thickness. They are also more susceptible of ornamental variations. Jeans, dimoties, serges, &c., are specimens of this kind of texture.

*Double Weaving.* In this species of weaving, the fabric is composed of two webs, each of which consists of a separate warp and a separate woof. The two, however, are interwoven at intervals, so as to produce various figures. The junction of the two webs is formed by passing them at intervals through each other, so that each particular part of both is sometimes above and sometimes below. It follows that, when different colours are employed, as in carpeting, the figure is the same on both sides, but the colour is reversed. The weaving of double cloths is commonly performed by a complicated machine, called a *draw-loom*, in which the weaver, aided by an assistant, or by machinery, has the command of each particular thread by its number. He works by a pattern, in which the figure before him is traced in squares, agreeably to which the threads to be moved, are selected and raised before each insertion of the woof. Kidderminster carpets and Marseilles quilts are specimens of this mode of weaving.

*Cross Weaving.* This method is used to produce the lightest fabrics, such as gauze, netting, catgut, &c. In the kinds of weaving which have been previously described, the threads of the warp always remain parallel to each other, or without crossing. But, in gauze weaving, the two threads of warp which pass between the same splits of the reeds, are crossed over each other, and partially twisted, like a cord, at every stroke of the loom. They are, however, twisted to the right and left alternately, and each shot, or insertion of the woof, preserves the twist which the warp has received. A great variety of fanciful textures are produced by variations of the same general plan."

WEBER, GODFREY, a theoretical and practical musician, born at Freinsheim, near Manheim, in 1779, studied law, and received an appointment as jurist, but, at the same time, devoted himself to music. The flute and violoncello were his instruments. He subsequently occupied himself chiefly with the theory of music, and published numerous articles on this subject in the Leipsic and Vienna Musical Gazettes, in the great German Encyclopædia (edited by Ersch and Gauber), in the musical gazette called *Cæcilia*, edited by himself, &c. &c., and in his distinguished work, Essay towards a systematic Theory of the Art of Composition for Self-instruction, with Notes for Scholars (2d ed. 1824 seq., 4 vols.), and his General Doctrine of Music for Teachers and Learners (Darmstadt, 1822). He was eventually appointed advocate-general of the court of cessation in Darmstadt, and received titles and orders. He composed many songs, also a collection called the *Lyre and Sword*, not to be confounded with the songs under the same title composed by Charles Maria von Weber. There are also other compositions of his. He invented the musical chronometer. (See *Time*.) His inquiries respecting the genuineness of Mozart's requiem, have involved him in various controversies.

WEBER, Henry William, was the son of a native of Westphalia, who was married to an English lady, and settled as a merchant at St Petersburg, where the son was born in 1783. His father dying when he was but three years old, his mother removed into Saxony, and her son received his education at a Germany university. At the age of fourteen he quitted Germany for England, and, adopting the profession of medicine, attended lectures one winter at Edinburgh, and then went to finish his studies at Jena. Returning to Edinburgh to obtain a medical diploma, he there formed an acquaintance with Sir Walter Scott, who employed him in various literary labours. In 1808, he commenced his career by publishing a new edition of the Battle of Flodden Field, a Poem of the Sixteenth Century, which was followed by Metrical Romances of the Thirteenth, Fourteenth, and Fifteenth Centuries, from ancient Manuscripts, with an Introduction, Notes, and a Glossary (3 vols.); and, in conjunction with Jamieson, he produced a work entitled Illustrations of Northern Antiquities, from the earliest Teutonic and Scandinavian Romances (1814, 4to.). In September, 1816, Mr Weber became disordered in his intellects, in which state he remained till his decease, in 1818. Besides the works already noticed, Mr Weber published editions of the Plays of Ford (2 vols, 8vo.), and of those of Beaumont and Fletcher (14 vols.); but his execution of these undertakings did not add to his reputation; and his errors as a dramatic commentator, were exposed by Mr Gifford.

WEBER, Charles Maria von, was born Dec. 18, 1786, at Eutin, in Holstein, and received a very careful education. Painting and music occupied his attention in his leisure hours. His efforts in the former art were not without success. But music gradually took entire possession of him. As soon as his father observed the promise of distinguished talent in his son, he fostered it with great care. Towards the end of the year 1798, he went to Munich, and his talent for dramatic music began to develope itself. He wrote, under the eyes of his teacher, an opera called the Power of Love and Wine; also a mass, and other compositions, all of which he subsequently burned. Soon after, he became possessed with the idea of excelling Sennafelder's new invention of lithography. He thought that he had discovered a better process, and went with his father to Freiberg, in Saxony, where all the necessary materials seemed to be at hand. But he soon gave up his idea, and with redoubled zeal resumed his application to his music. Six variations of his were published at that time in Munich. When a boy of fourteen, he composed an opera (the Maid of the Wood), which was performed in 1800, and acquired a celebrity subsequently disagreeable to the author, who had come to consider it a very immature production. In 1802, he made a musical journey with his father, and collected and studied theoretical works on music with the greatest zeal, and, having been led, by his own reflections, to study harmony thoroughly, formed a musical system of his own, in which he adopted the excellent rules of the old masters. He went to Vienna, where he became acquainted with the immortal Haydn, and with Vogler, who received him with great kindness. By Vogler's advice, he gave up for a time, though with reluctance, the composition of large pieces, and studied for two years the works of the greatest masters. At the same time, he acquired great proficiency in playing on the piano. During this time, he published only a few small works. He then went, as musical director, to Breslau, where he composed the greatest part of *Rübezahl*, an opera by Rhode. In 1806, Eugene, duke of Würtemberg, induced him to go to Carlsruhe, in Silesia, where he wrote two symphonies, several concerts, &c. He soon after followed the duke to Stuttgard, where he wrote his opera *Silvana;* re-wrote his cantata the First Tone, several overtures, &c.; and composed much for the piano. In 1810, he set out for France, Munich, Berlin, &c., and wrote his opera *Abu-Hassan*. From 1813 to 1816, he directed the opera in Prague, where he composed the great cantata Battle and Victory, which, though imposing by its grandeur and copiousness of ideas, does not yet show a settled style. Living only for his art, he gave up his place, when his purpose—the entire re-organization of the opera, was effected. In 1816, he lived in Berlin, where he received an invitation to form a German opera at Dresden, which he accepted, and to which he devoted all his powers. There he wrote, besides several instrumental pieces, various occasional cantata; a mass and offertorium (1818) for the day of the king's baptism, which was afterwards followed by a second one; and his *Der Freyschütz* (text by Kind), which was first performed in Berlin in 1821, and since that time has acquired universal reputation; and several melodies, which, like some of Mozart's, are sung, and even whistled, wherever Europeans or their descendants are found. At the same time, he composed the music for *Preziosa*. The uncommon success of *Der Freyschütz* procured him an invitation to compose an opera for Vienna, for which purpose madame de Chezy wrote for him *Euryanthe*, after an old French tale. This work occupied him chiefly from 1822 to the autumn of 1823; and, in September of the same year, he travelled to Vienna to direct its performance, which took place, for the first time, October 25, 1823. It met with great applause. In 1824, Weber received from London an invitation to compose *Oberon* for Covent-garden theatre. The first act was sent him at the same time. He prepared himself for it by studying English. But the numerous duties of his appointment, often increased by the addition of those of his colleague, Morlachi, who was in ill health, and often went to Italy, together with his devotion to study, impaired his health. He went, in the summer of 1825, to Ems. Towards the end of 1825, he directed the performance of his *Euryanthe* on the stage of Berlin. His health grew worse in 1826. In February, he went to London, where he finished his magnificent *Oberon*, directed the performance of it, and on the day when *Der Freyschütz* was to be performed for his benefit (June 5), breathed his last. Weber made an epoch in opera music, produced much that was new, applied the instruments with great effect, and, in fact, gave a new life to the opera. The songs of the spirits in *Oberon* have a peculiarly ideal character. Unfortunately, his comic opera the Three Pintos, on which he had laboured for several years, was left unfinished. Weber united many great musical qualities: he was not only one of the most original composers, a great performer, showing peculiar originality in piano playing, an ardent, judicious and intelligent director, equally at home in the æsthetical and in the technical parts of his art,—but also a very intellectual and accomplished man, with higher and more philosophical views of life than artists often have. Besides the works already

mentioned, his published compositions comprise a number of instrumental pieces especially for concertando instruments, and calculated for accomplished performers (concerts, concertinos, pot-pourris and harmony pieces for the piano-forte, clarionet, bassoon, horn, violoncello, sonatas, variations, polonaises and dances, some symphonies, and a quintetto for the clarionet), various cantatas, vocal pieces for four voices, and songs (particularly the compositions of Körner's Lyre and Sword, which have become truly national songs of the Germans). The Posthumous Works of Ch. M. von Weber (Dresden, 1828), containing the results of his views and experience, are of much interest. Weber was an excellent man, a kind husband, a careful father, and a faithful friend.

WEBSTER, John, a dramatic poet of the seventeenth century, was clerk of the parish of St Andrew, Holborn, and a member of the company of merchant tailors. His works are the White Devil, or the Tragedy of P. Giordano Ursini, Duke of Brachiano, with the Life and Death of Vittoria Corombona, the famous Venetian Courtesan (1612); the Devil's Law-Case, a tragi-comedy (1623); the Duchess of Malfy, a tragedy (1623); Appius and Virginia, a tragedy (1654); the Thracian Wonder, a comical history (1661); and a Cure for a Cuckold, a comedy (1661). He was also the author of a pageant, exhibited in 1624, by the tailors' company; and he assisted Dekker in writing Wyatt's History.

WECHABITES. See *Wahabees.*

WEDDERBURN, Alexander, earl of Rosslyn, a distinguished English lawyer, eldest son of Peter Wedderburn, one of the senators of the college of justice in Scotland, was born in 1733, and bred to the law in his native country, but early removed to the Middle Temple, by which society he was called to the bar in 1757. He rapidly acquired reputation, and also obtained the patronage of the earls of Bute and Mansfield. He was appointed solicitor-general in 1771, in which office he insulted Franklin, in arguing before the privy council on American affairs. In 1778, he was made attorney-general, and, in 1780, chief justice of the common pleas, with the title of lord Loughborough. He adhered to the party of Mr Fox when Mr Pitt first came into power; but joined the administration, with many others, under the alarm produced by the French revolution in 1793, when he succeeded lord Thurlow as chancellor, which office he held until 1801, when he retired with the title of earl of Rosslyn. As a lawyer, he was able, plausible, subtle and eloquent; as a politician, rather a partisan than a statesman, but serviceable to the side which he espoused. He died without issue, January 3, 1805. Lord Rosslyn wrote a work on the management of prisons.

WEDDING, WEDLOCK. See *Marriage*, and *Husband and Wife.*

WEDGE. See *Mechanics.*

WEDGWOOD, Josiah, an ingenious improver of the pottery manufacture, was born in August, 1730, and was the younger son of a potter, at Burslem, in Staffordshire, to whose business he succeeded. He soon distinguished himself by his discoveries of new species of earthen ware and porcelain, as well as by the taste and fancy displayed in the forms and decorations of the various results of his ingenuity. So important was the result, that in a very few years he turned the current of importation of the finer earthen wares into that of exportation. In 1763, he obtained a patent for a new species of ware, which received the name of *queen's ware*, and, continuing his experimental researches, added six other different species of ware to the English manufacture. He was versed in several branches of natural philosophy, and invented a pyrometer for measuring the higher degrees of heat employed in the various arts. He was also the proposer of the Grand Trunk canal, uniting the Trent and Mersey, and subsequently communicating with the Severn and the Grand Junction canal. To this navigation, which was of the greatest benefit to the pottery district, he added a turnpike-road, ten miles in length, which gave still greater facilities to that extensive branch of manufacture. His own pottery was near Newcastle-under-Line, in Staffordshire, where he built a village, which he called Etruria. In 1786, he was the promoter of an association in London, denominated the general chamber of the manufactures of Great Britain; and he much distinguished himself by opposing Mr Pitt's proposition for adjusting the commercial intercourse between Great Britain and Ireland. His death took place January 3, 1795, in his sixty-fourth year. To great public spirit and an open hand in the distribution of the large fortune which he acquired by his spirit and enterprise, in beneficial objects and institutions, Mr Wedgwood united great private benevolence, and was a benefactor to the poor in the most enlarged sense of the term. He was a member of the royal and antiquarian societies. A striking bust of him, by Nollekins, is placed in the chancel of the parish church of St Peter, Stoke-upon-Trent. See *China Ware* and *White Ware.*

WEDNESDAY; the fourth day of the week (in Latin, *dies Mercurii*, whence the French *Mercredi*, the Italian *Mercoledi*, &c.). The Germans call it *Mittwoche* (mid-week). The English name is derived from the old Scandinavian deity Odin or Woden. In Anglo-Saxon, it is *Vodensdag;* in Swedish, *Odensdag;* in Dutch, *Woensdag.* We find the same prefix in the name of some English towns: Wednesbury, Wednesfield, &c. See *Week.* See, also, *Ash-Wednesday.*

WEEK. The week approaches pretty nearly to a quarter of a lunation; but this division of time has no obvious foundation in nature. It appears, notwithstanding, to have prevailed very extensively over the world from the earliest times; and, what is remarkable, the days of the week are generally named after the sun and planets, only six planets having been known to the ancients. This manner of distinguishing a series of seven days is found to be the same among the ancient Egyptians, Indians and Chinese. Still the order is not that of the distances, magnitude or brightness of the planets. The following ingenious conjecture has been adopted to account for the origin of the names and arrangement of the days of the week:—The planetary arrangement of Ptolemy was thus: 1. Saturn; 2. Jupiter; 3. Mars; 4. the Sun; 5. Venus; 6. Mercury; 7. the Moon. Each of these planets was supposed to preside successively over each hour of the twenty-four of each day, in the order above given. In this way, Saturn would preside over the first hour of the first day, Jupiter over the second hour, Mars over the third, the sun over the fourth, and so on. Thus the sun, presiding over the fourth, eleventh and eighteenth hours of the first day, would preside over the first hour of the second day; and, carrying on the series, the moon would preside over the first hour of the third day, Mars over the first hour of the fourth day, Mercury over the first hour of the fifth day, Jupiter over

the first hour of the sixth day, and Venus over the first hour of the seventh day. Hence the names of the days yet used in the learned professions: 1. *dies Saturni* (Saturday); 2. *dies Solis* (Sunday); 3. *dies Lunæ* (Monday); 4. *dies Martis* (Tuesday); 5. *dies Mercuri* (Wednesday); 6. *dies Jovis* (Thursday); 7. *dies Veneris* (Friday). The English names of the days of the week are derived from the Saxons, and are partly adopted from the more civilized nations of antiquity. For the etymology of the English names, see the separate articles.

WEENINX, John Baptist, a celebrated Dutch painter, was born at Amsterdam, in 1621. He was the son of an architect, and became the pupil of Abraham Bloemart. After residing some time in Italy, he returned to Holland, and settled at Utrecht, where he died in 1660. He painted small landscapes, animals and historical pieces with great accuracy and perfection, but was deficient in variety.—His son *John*, born at Amsterdam, in 1644, was more distinguished. He studied at first under his father, and acquired great skill in the delineation of animals. Still life, the chase, dead game, &c., are represented in his works with an inimitable truth and great beauty of colouring. He died at Amsterdam, in 1719.

WEEVIL (*curculio*); a genus of hard-shelled beetles, easily recognised by having the head prolonged into a long horny snout, at the end of which the mouth is situated. By later naturalists, this has very justly been considered as a family of insects, and has been divided into numerous genera. These insects have four joints to each of the tarsi; the antennæ arise from the snout above mentioned, are usually clavate, and in most of the genera form an angle at the apex of the first joint: the abdomen in all is large. The larvæ are entirely destitute of feet, and live, some in the interior of seeds, others in wood, in the interior of stems, under the bark of trees, in fruits, in the hardest nuts, and some even in the interior of the bodies of other insects. In their perfect state, all these insects feed on different parts of plants, but especially on leaves and the petals of flowers.

The weevil proper (*calandra granaria*) is best known on account of the ravages it commits among grain, sometimes destroying one third or one fourth of the whole crop. Each larva, as soon as born, penetrates into the interior of a grain, and feeds on its substance till it has attained its full size; then undergoes a change, and takes the form of a chrysalis; and in due time the perfect insect perforates the hull, which is now nearly empty.

The *C. oryzæ* very much resembles the preceding. It lives in rice, but is observed to attack principally those grains from which the hulls have not been detached.

WEIGEL, Valentine. See *Weigelians*.

WEIGELIANS were a Protestant sect in the seventeenth century, chiefly resident in Upper Saxony, founded by Val. Weigel, pastor of Tschopau, in the Saxon Erzgebirge (born in 1533, died in 1588), a pious and popular minister. The writings of Theophrastus Paracelsus, and of Tauler, had led him to entertain peculiar views, which he set forth in his works. These, however, were not published till long after his death (1611—21). He speaks much of an unborn inner light. The theology taught at the universities is false in his eyes. All creatures are effluxes of the Divine Being. His view of the Trinity was peculiar. He set little value on outward worship, and depicts the ministers of the Protestant church in black colours. Several of his works were burnt in 1624, at Chemnitz; but they had already gained many adherents. Jacob Böhme was a Weigelian.

WEIGHTS. In the article *Measures*, we have given an account of the reformation of the English measures. The article *France*, division *Decimal System of France*, explains the principles of the new French measures. The following tables exhibit the relations of some of the most important measures of weight.

1. *French Measures of Weight.*—The unit used in weighing is the kilogramme. It has been fixed by law, and is equal to the specific weight of the distilled water contained in one cubic decimètre. The kilogramme thus fixed was found to be equal to 2 livres (pounds), 5 gros, 35 grains, $\frac{15}{100}$ poids de marc, and to 2 lbs. 8 oz. 3 dwt. 6·355 grains troy, or 2 lbs. 2 oz. 4 drams, 16 grains avoirdupois weight, English. As the most common things of daily consumption are sold by weight in small quantities, a great difficulty arose in introducing this part of the system; and the old denominations of weight have therefore been allowed to remain, with some modification in their actual value, taking the kilogramme as the basis. The kilogramme is divided into 2 livres; the livre is subdivided into 16 ounces, the ounce into 8 gros, and the gros into 72 grains This new livre, therefore, exceeds the old one (poids de marc) by $\frac{2}{100}$; so, to reduce kilogrammes into old measure, it is necessary to multiply by 2 and add $\frac{2}{100}$.

| *English Troy.* | | *French.* |
|---|---|---|
| 1 grain (1-24th of a dwt.) | = | 0·06477 gramme. |
| 1 pennyweight (1-20th of an ounce) | = | 1·55456 gramme. |
| 1 ounce | = | 31·0913 grammes. |
| 1 pound troy imperial | = | 0·3730956 kilogramme |

| *English Avoirdupois.* | | *French.* |
|---|---|---|
| 1 dram (1-16th of an ounce) | = | 1·7712 gramme. |
| 1 ounce (1-16th of a pound) | = | 28·3384 grammes |
| 1 pound avoirdupois imperial | = | 0·45341 48 kilogram |
| 1 hundred weight (112 pounds) | = | 50·78246 kilogrammes |
| 1 ton | = | 1015 649 kilogrammes. |

1 millier = 1000 kilogrammes (weight of a tun of sea-water).
1 quintal = 100 kilogrammes
1 hectogramme = 1-10th of a kilogramme.
1 decagramme = 1-100th ..
1 gramme = 1-1000th ..
1 decigramme = 1-10,000th ..

2. *English Measures of Weight.*—The statute of 5 George IV., c. 74, made some slight modifications in the measures of weight, but retained, in the main, the existing measures. "The troy weight," say the commissioners of weights and measures, "appeared to us to be the ancient weight of this kingdom, having existed in the same state from the time of Edward the Confessor; and there are reasons to believe that the word *troy* has no reference to any town in France, but rather to the monkish name given to London of Troy Novant, founded on the legend of Brute: troy weight, therefore, according to this etymology, is, in fact, London weight. We were induced, moreover, to preserve the troy weight, because all the coinage has been uniformly regulated by it; and all medical prescriptions or *formulæ* always have been estimated by troy weight, under a peculiar subdivision, which the college of physicians have expressed themselves most anxious to preserve." It was resolved, therefore, to continue the use of troy weight, and also, on account of the accuracy of the troy standard, to raise the avoirdupois weight from this basis. "We found," continue the commissioners, "the avoirdupois weight, by which all heavy goods have been for a

long time weighed (probably derived from *avoirs* (*averia*), the ancient name for goods or chattels, and *poids*, weight), to be universally used throughout the kingdom. This weight, however, seems not to have been preserved with such scrupulous accuracy as troy weight, by which more precious articles have been weighed; but we have reason to believe that the pound cannot differ by more than one, two or three grains, from 7000 grains troy. It, therefore, occurred to us, that we should be offering no violence to this system of weights, if we declared that 7000 grains troy should be hereafter considered as the pound avoirdupois." It was accordingly enacted that, from January 1st, 1826, the standard brass weight of one pound troy weight, made in 1758, should be the genuine standard measure of weight, and be denominated the imperial standard troy pound, containing 5760 grains, and that 7000 such grains should be a pound avoirdupois.

### Division I.—*Avoirdupois Weight.*

| | | |
|---|---|---|
| 27⅓ grains | = 1 dram | = 27⅓ grains |
| 16 drams | = 1 ounce | = 437½ .. |
| 16 onnces | = 1 pound (lb.) | = 7000 .. |
| 28 pounds | = 1 quarter (qr.) | |
| 4 quarters | = 1 hundred weight (cwt.) | |
| 20 hundred weight | = 1 ton | |

This weight is used in almost all commercial transactions, and in the common dealings of life.

*Particular Weights belonging to this Division.*

| | | cwt. | qr. | lb. | |
|---|---|---|---|---|---|
| 8 pounds | = 1 stone | | | | used for meat and fish. |
| 7 pounds | = 1 clove | | | | |
| 14 pounds | = 1 stone | = 0 | 0 | 14 | used in the wool trade. |
| 2 stone | = 1 tod | = 0 | 1 | 0 | |
| 6½ tod | = 1 wey | = 1 | 2 | 14 | |
| 2 weys | = 1 sack | = 3 | 1 | 0 | |
| 12 sacks | = 1 last | = 39 | 0 | 0 | |

A pack of wool contains 240 lbs. A truss of hay weighs 56 lbs., and of straw 36. A stone of glass is 5 lbs.; a seam 24 stone.

| | | |
|---|---|---|
| 8 pounds | = 1 clove, | used for cheese and butter. |
| 32 cloves | = 1 wey in Essex, | |
| 42 .. | = .. in Suffolk, | |
| 56 pounds | = 1 firkin, | |

### Division II.—*Troy Weight.*

| | | |
|---|---|---|
| 24 grains | = 1 pennyweight | = 24 grains. |
| 20 pennyweights | = 1 ounce | = 480 .. |
| 12 ounces | = 1 pound | = 5760 .. |

These are the denominations of troy weight when used for weighing gold, silver, and precious stones, except diamonds. But troy weight is also used by apothecaries in compounding medicines, and by them the ounce is divided into eight drams, and the dram into three scruples, so that the latter is equal to twenty grains. For scientific purposes, the grain only is used; and sets of weights are constructed in decimal progression, from 10,000 grains downwards to one hundredth of a grain. By comparing the number of grains in the avoirdupois and troy pound and ounce respectively, it appears that the troy pound is less than the avoirdupois, in the proportion of fourteen to seventeen nearly; but the troy ounce is greater than the avoirdupois, in the proportion of seventy-nine to seventy-two nearly. The *carat*, used for weighing diamonds, is 3⅛ grains. The term, however, when used to express the fineness of gold, has a relative meaning only. Every mass of alloyed gold is supposed to be divided into twenty-four equal parts; thus the standard for coin is twenty-two carats fine, that is, it consists of twenty-two parts of pure gold, and two parts of alloy. What is called the *new standard*, used for watch-cases, &c., is eighteen carats fine.

3. *Ancient Weights.*—It is well known that this subject is involved in considerable difficulty. The following table gives the estimates of different authors, in regard to some of the ancient weights.

| | | English Troy Grains. |
|---|---|---|
| Attic obolus | = | 8·2 Christiani.<br>9·1 Arbuthnot. |
| Attic drachma, | = | 51·9 Chr.<br>51·6 Arb.<br>69· Paucton. |
| Lesser mina | = | 3,892 Chr. |
| Greater mina | = | 5,189 Chr.<br>5,464 Arb.<br>6,900 Pauc. |
| Medical mina | = | 6,994 Arb. |
| Talent = 60 minæ | = | ½ cwt. English. |
| | | Grains. |
| Old Greek drachm | = | 146·5 Arb. |
| Old Greek mina | = | 6,425 .. |
| Egyptian mina | = | 8,326 .. |
| Ptolemaic mina of Cleopatra | = | 8,985 .. |
| Alexandrian mina of Dioscorides | = | 9,992 .. |
| Roman denarius | = | 51·9 = ½ Roman oz. Chr.<br>62·5 = ⅛ Roman oz. Arb. |
| Denarius of Nero | = | 54 Pauc. |
| Ounce | = | 415·1 Chr.<br>437·2 Arb.<br>431·2 Pauc. |

Pound = 12 Roman ounces.

WEIMAR, Saxe (in German, *Sachsen-Weimar*); a sovereign grand-duchy of Germany, lying on the south of the Prussian government of Erfurt, and bordering on Gotha. It is composed of two parts or provinces, separated from each other—the principality of Weimar, and the principality of Eisenach, with a population of 226,628 souls, on 1400 square miles. The province of Weimar comprehends the duchies of Weimar and Jena, with a part of the principality of Altenburg, the chief part of the circle of Neustadt, and the petty districts of Ilmenau, Oldisleben, and Alstadt, which lie scattered in Thuringia. The province of Eisenach lies on the west side of Gotha, and to the east of Hesse-Cassel. (See *Eisenach.*) The surface of the province of Weimar is agreeably diversified; the soil fertile, producing corn sufficient for consumption; and it has good pastures, which feed numerous flocks of sheep; but large cattle are less attended to. The province of Eisenach is more mountainous and less fertile. The revenue is about £180,000. The government is a limited monarchy, administered by the grand-duke, with a representative constitution, granted by the duke May 5, 1816, which established a diet composed of deputies from the nobles, citizens and peasants, and guarantied the freedom of the press. The grand-duke of Saxe-Weimar-Eisenach has the twelfth vote in the German diet, in conjunction with the other princes of the Ernestine line (see *Saxons*), and one vote by himself in the plenum. The grand-duchy has one university, that of Jena, with (in 1829) 619 students, two gymnasia, and numerous inferior institutions for education. The religion is Lutheran.

WEIMAR; capital of the grand duchy, on the Ilm; 94 miles west of Dresden; lon. 11° 21′ E.; lat. 50° 59′ N.; population, 9917. It is situated in a pleasant valley, with a woody mountain to the north, and hills of little elevation to the south and

east, while the river winds along the south side of the town. The prospect is agreeable, particularly in summer, when the gardens surrounding the town appear to encircle it with foliage. The houses are built in a plain and somewhat antique style. The grand ducal residence is a large castle, finely situated to the east of the town, with a park extending to the banks of the Ilm, and open to the public. The Belvidere, another residence of the reigning family, is situated on a delightful eminence to the south. The town contains two Lutheran churches, a work-house, an hospital, a gymnasium, a seminary for school-masters, an academy for drawing, painting and sculpture, a theatre, erected in 1825, an extensive institution connected with the study of geography and statistics, and a public library of upwards of 130,000 volumes. Weimar is a town of literary celebrity, and long held the same rank in Germany, for literature, as Dresden has for the fine arts; and, owing to the liberal patronage of the court, a number of the best writers of the last and present age have either been educated or residents here. In the early years of the present century, there were residing here more than twenty writers of note, among whom were Schiller, Göthe, Herder, Wieland and Kotzebue; the last of whom was a native.

WEIMAR, Anna Amalia, duchess of Saxe. See *Amalia.*

WEIMAR, Charles Augustus, grand duke of Saxe, born in 1756, and died in 1828, may well boast of having done great things in a little state. He was educated by his mother Amalia, who first collected the lights of learning in the little court of Weimar. The young prince was carefully instructed by able men, among whom was Wieland, and, after travelling in France and Switzerland, assumed the reins of government in 1775. During his reign of fifty-three years, he was not only the father of his people, but the patron of learning and the arts. Göthe, Herder, Wieland, Schiller, von Voigt, von Einsiedel, von Knebel, Musäus, and others, were among the ornaments of his court; and the university of Jena experienced his patronage. In 1816, he granted his people a representative constitution. The jubilee of his accession to the government was celebrated, in 1825, with delight by his grateful subjects.—He was succeeded by his son *Charles Frederic*, born in 1783, who married a sister of Alexander, emperor of Russia.—His second son, *Charles Bernard*, born in 1792, is major-general in the service of the king of Netherlands.

WEIMAR, Bernard, duke of. See *Bernard.*

WEINSBERG; a town in the circle of the Neckar, in Würtemberg, on the Sulm, with 1720 inhabitants. The ruins of the castle of Weibertreu (Wives-faith) recall to mind its siege, in 1140, when the emperor Conrad III. granted free egress to the women only, who were allowed to carry off the best of their possessions on their back. The women came out, each carrying her husband on her back. The emperor pardoned the men. See *Guelphs.*

WEISHAUPT, Adam, born at Ingolstadt, in 1748, studied at the same place, became, in 1772, *professor extraordinarius* of law, and, in 1775, professor of natural and canon law. As the professorship of canon law had, until then, always been given to ordained clergymen, the clergy attacked him, particularly as he, though a pupil of the Jesuits, showed himself their bitterest enemy, after the abolition of their order. He now formed a connexion with several able men, and strove to gain them over to his system of cosmopolitism; but, as he went to work openly, the public authorities could not be made to believe that his designs were dangerous. The Jesuits, therefore, attacked him the more bitterly in private. As a jurist, he obtained much fame: his lectures attracted students belonging to all the faculties; and he made use of this opportunity to propagate his cosmopolitism, and for this purpose founded the order of *Illuminati*, which afterwards became so famous. Weishaupt lost his professorship, in 1785, in consequence of the persecutions of the Catholic clergy and his own imprudence, and went to Gotha, where he published several works—1. Complete History of the Persecution of the Illuminati in Bavaria; 2. System of the Illuminati; 3. Description of the Illuminati; 4. Pythagoras, or Considerations on the Secret Art of Ruling; 5. Materials for the Advancement of the Knowledge of the World and of Men.

WEISSE, Christian Felix, a writer who has done much for the improvement of children, was born Feb. 8, 1726, at Annaberg, in the Saxon Erzgebirge. He went, in 1745, to the university of Leipsic, where he studied philology. There he became acquainted with Klopstock, Cramer, the Schlegels, and others. With Lessing he formed an intimate friendship, and wrote, in connexion with him, for the German theatre. In 1759, he went, as tutor of a young count, to Paris. He afterwards produced songs and other poems, plays, &c., and, in 1760, his Library of Polite Learning and the Fine Arts. In 1762, he was appointed tax-gatherer, which office he held till his death. After 1774 he ceased to write for the stage, and chiefly turned his attention to works for children. His Songs for Children, and his A B C Book were received with great applause. In 1775, he began his Children's Friend, which, within six years, went through five editions; and there are few Germans whose youth has not been delighted and improved by this book. His Correspondence of the Family of the Children's Friend was a continuation of this. He died in 1804. He has described himself with much candour in his Autobiography, edited by E. C. Weisse and S. G. Frisch (Leipsic, 1806).

WELD. See *Wold.*

WELDING is the intimate union produced between the surfaces of two malleable metals, when heated almost to fusion and hammered. This union is so strong that when two bars of metal are properly welded, the place of junction is as strong, relatively to its thickness, as any other part of the bar. Only two of the old metals are capable of firm union by welding, namely, platina and iron. The same property belongs to the newly-discovered metals potassium and sodium. To weld bar iron to another piece of iron requires a heat equal to 8·877 Fahr.

*Welding Heat*, in smithery; a degree of heat given to iron, &c., sufficient to make any two bars or pieces of iron unite by a few strokes of the hammer, and form one piece.

WELL, in naval affairs; an apartment formed in the middle of a ship's hold, to enclose the pumps from the bottom to the lower deck. Its use is to defend the pumps from damage, and prevent the entrance of ballast, &c., which would otherwise choke the tubes in a short time, and render the pumps incapable of service. By means of this enclosure, the artificers may, likewise, more readily

descend into the hold to examine or repair the pumps, as occasion requires.

WELLAND CANAL. See *Canal.*

WELLS; a city of England, in Somersetshire, nineteen miles south-west of Bath, 120 west by south of London. United with Bath, it forms a bishop's see. It is situated in a diversified and picturesque country, having fertile and extensive meadows to the south, east and west. It is small, compact, generally well built, and contains one of the most magnificent cathedrals in England (381 feet long, 131 broad, with a quadrangular tower 178 feet high). It receives its name from a remarkable spring, called *St Andrew's well* (vulgarly *bottomless well*). Population in 1841, 7050.

WELSER; an old patrician family in Augsburg, now extinct. A *Julius Welser* is mentioned under the emperor Otho I., who was made a noble, in 959, on account of his services in the war against the Hungarians.—His son *Octavianus* settled in Augsburg; and from him sprung the family which became so famous.—*Bartholomew Welser* was privy counsellor of Charles V. and so wealthy that, with the family of the Fugger, he lent 1,200,000 florins to the emperor. With the consent of the emperor, he equipped, in 1528, three vessels in Spain, which sailed under the command of Ambrose Dalfinger, of Ulm, to America, and took possession of the province of Venezuela, which the emperor made over to Welser as a pledge. 480 Germans accompanied this expedition to Venezuela, in order to settle there; but their avarice is said to have involved them in quarrels with the natives, of whom they destroyed great numbers, and they were at length cut off themselves. The Welser family remained, nevertheless, twenty-six years in possession of Venezuela; but, after the death of Charles V. the Spaniards deprived them of it. During the same period, the Welsers, together with some merchants of Nuremberg, sent a vessel to the East Indies, in order to seek new channels of commerce. The journal of this journey of discovery is said to be still in existence.

The celebrated *Philippina Welser* was niece of the above-mentioned Welser, and daughter of his brother Francis. She had received an uncommonly good education, and was of great beauty, so that Ferdinand (whose father subsequently became the emperor Ferdinand I.) fell in love with her, in 1547, in Augsburg. She refused all the offers of the young duke (then but nineteen years old), except on condition of marriage. The ceremony was privately performed, in 1550, without the knowledge of his father, or his uncle Charles V. The archduke Ferdinand was much incensed when he heard of it, and, for a long time, refused to see his son. In foreign countries, this *mesalliance* also excited much attention. It was not till after eight years that the father was reconciled. Philippina died, thirty years after the marriage, at Inspruck, in 1580. The archduke, her husband, honoured her memory by a medal, with the inscription *Divæ Philippinæ*. Of her two sons, the eldest, *Andrew*, became cardinal; the second, *Charles*, distinguished himself in the wars in Spain and Hungary, and died, in 1618, without leaving any children.

WEN; an encysted tumour. Encysted tumours are formed, in the midst of the cellular substance under the skin, of that which separates the muscles, or even of that which enters into the structure of the different organs. These tumours are comprehended in a membrane called a *cyst*. The causes of the formation are unknown, but a strongly-marked tendency to such swellings exists in particular individuals, which leads to the suspicion of constitutional causes. An encysted tumour, in its commencement, is always exceedingly small, and perfectly indolent; and it is often many years before it attains a considerable size. These swellings are usually spherical, except when this form is altered by the disposition of the surrounding parts. Practitioners are not acquainted with any effectual means of stopping the growth of them. The best mode of treatment is amputation of the whole swelling.

WENCESLAUS (*Wenzel*), emperor of Germany (frequently called only *king* of the Germans, because he was not crowned in Rome), and king of Bohemia, of the house of Luxemburg, eldest son of Charles IV., was born in 1361. The lawless state of Germany, at that period, might have bid defiance to the talents and spirit of the greatest ruler; how much more to a Wenceslaus! At the age of two years, he was crowned king of Bohemia. When six years old, he infeoffed a duke, who kneeled before him, at the command of his father. At the age of ten years, he was married. Two years later, he was invested with the mark of Brandenburg, and made to take part in state affairs; and he was hardly eighteen years old when he succeeded his father (in 1378) on the imperial throne. Of the admonitions which his father gave him shortly before his death, he disregarded the most important—"Keep the pope, the priesthood and the Germans your friends." Pride and cruelty were the predominant traits of his character; and his inclinations led him to low sensuality. Perhaps his conduct may be in part attributed to the consequences of an attempt to poison him, which was followed by a disease of the liver, attended with a burning thirst. Two circumstances rendered his situation particularly difficult. In the beginning of his reign, the schism in the church became peculiarly glaring, in consequence of the election of two popes, and had the most injurious influence on political affairs. The abominable *jus manuarium*, or right of private war, was universal in Germany, owing to the want of civil order, and of an energetic administration. Private leagues were formed to procure that redress of wrongs which the laws could not afford; and a confederation of the wealthy and powerful cities in Suabia and on the Rhine, opposed the jealous, arrogant and tyrannical nobility and princes, who, in various parts of Germany, also formed alliances. Wenceslaus, in the midst of his revelry and debauchery, looked supinely on the disorders of the empire, and seems to have secretly encouraged the great league of the cities, in order to weaken the power of the princes. At length the fear of seeing the royal authority almost annihilated by these leagues, induced him to endeavour to counteract them. In 1387, a violent war broke out between the confederated cities on one side, and the princes, counts, and lords on the other, in which the cities were obliged to yield, after the battle of Döffingen. Wenceslaus remained at Prague; and it is said that he answered the deputies, who invited him to come to Germany to restore peace, in terms to the following effect: "I do not know that I am bound to reconcile the estates, as I did not cause their quarrels; and I fear the fate of the wolf, in the fable, who attempted to reconcile two quarrelling lambs." At all events, he acted according to this principle. The defeats suffered by the cities obliged them to remain quiet, and Wenceslaus willingly

fulfilled the wish of the members of the empire, to extinguish by force, all debts due to Jews, for which all debtors were obliged to pay fifteen per cent. of the debts to the emperor, who was the legal protector of the Jews! In Bohemia, Wenceslaus was disliked on account of his preference of the Germans, and his arbitrary spirit. He alienated the nobility by exacting the restoration of the crown domains, which had been mortgaged to them, and excited general odium on account of the cruelty with which he acted in his disputes with the clergy. His brother, the king of Hungary, and his cousin, the margrave of Moravia, were hostile to him; and thus originated, in 1394, a conspiracy of the Bohemian nobles, who surprised him, and kept him prisoner. After some months he was released; but his authority was gone in Germany. He was accused of having made John Galeazzo Visconti duke of Milan for money, and thus diminished the territory of the empire. Dissensions broke out every where; and the part which circumstances compelled him to take in ecclesiastical affairs, contributed much to deprive him of the German crown. He united with France, to induce the Popes, elected in Rome and Avignon, to resign, and to re-establish peace in the church, by a new election; and he undertook, particularly, to induce Boniface to resign; but this pope had been recognised by most of the electors, and they were dissatisfied with the measures of Wenceslaus, particularly the archbishop of Mayence, who owed his elevation to this pope. At last the electors resolved to deprive him of the crown, but disagreed respecting who should succeed him; so that, in 1400, the electors of Mayence, Treves, Cologne, and the Palatinate, only, pronounced his deposition. Wenceslaus remained inactive, but, nevertheless, found several supporters, because most of the members of the empire were dissatisfied with the steps of those electors. His successor, Robert, could do as little to remedy the deep-rooted evils of the empire as Wenceslaus. The latter quarrelled again with his brother Sigismund, who took him prisoner, and kept him a year and a half in Vienna. Robert died in 1410, and Sigismund, to whom Wenceslaus resigned his claims, was elected emperor. He remained in possession of Bohemia, and was only disturbed by the commotions caused by Huss. He died of apoplexy, in 1419, upon hearing of the insurrection of the Hussites, after the execution of Huss, whom he had endeavoured to protect. Modern historians have attempted to find apologies for his conduct. Certainly all is not true which was said of him in his time, but his faults deprive him of all esteem.

WENDS; the name given by the Germans to a particular branch of that great Sclavonic family, the settlements of which in the northern and eastern part of Germany, from the Elbe along the Baltic to the Vistula, and, towards the south, as far as Bohemia, were known as early as the sixth century. It included, 1. the Obotrites, in Mecklenburg, a powerful tribe, under their own kings. Henry the Lion, duke of Saxony, almost extirpated them in the twelfth century. 2. The Pomeranians and Wiltzians, from the Oder to the Vistula. Their princes united themselves with Germany in 1181, and did not become extinct until 1637. 3. The Ukers (Frontier Wends; see *Ukraine*), and other tribes in the five Brandenburg marks. Albert the Bear, margrave of Brandenburg, conquered and extirpated them, not because they were heathens, but because they were Sclavonians. 4. The Sorbians (more properly *Serbians*), between the Saale and Elbe: ancient Misnia, therefore, was called by the Bohemians, *Srbsko*. 5. Lusitzians (improperly *Lusatians*), in the margraviate of Upper and Lower Lusatia. The Serbians had their own lords, princes and kings, and extended their dominion over the whole of the present Osterland, Misnia, the two Lusatias, Anhalt, the Electoral Circle, and the southern part of Brandenburg. In the tenth century, German colonists became intermingled with them. The mountains, particularly, became peopled with Germans, because the Sclavonians preferred the plains, as more adapted to agriculture; hence, even now, the villages in the mountains have German names, but almost all places in the plains, Sclavonic names. In Leipsic, the Servian language ceased to be spoken in 1327, though many Sclavonic words have been preserved in the country. From the mixture of the Sclavonians with the Franks and Saxons, the Upper Saxon idiom was formed since the tenth century. Many German names have evidently come from the Serbes; those which end in *itz*, *ik*, *nik*, *enz*, as Nostitz, Maltitz, Gablenz, Lessing (said to be originally Lesnjk). Of the Lusatians only, considerable remains have been preserved, owing to their long connexion with Bohemia, and the toleration which they experienced. The dialect of Upper Lusatia approaches to the Bohemian; the Lower Lusatian more to the Polish. In imitation of the German, it adopted the article and several other peculiarities, as did also the Sclavonians bordering on Germany, in Stiria, Carinthia and Carniola. Of the state of their language before their conversion to Christianity, we know little. Even after that event they remained subject to the severest oppression: no light penetrated to them. It was not till after the reformation that they began to write their dialect. During the thirty years' war (q. v.), it was contemplated to eradicate their language, and German ministers were given to them: sixteen parishes actually became German. It was not till the eighteenth century that they were left unmolested in the use of their own language. The orthography was settled in 1689, by a mixture of Bohemian and German. In 1716, a seminary, for the instruction of the Wends, was established in Leipsic, and, in 1749, one in Wittenberg. A Wendish seminary for Catholics was also established in Prague. There is a complete translation of the Bible, a grammar, and several other books, in their language; yet the decrease of the Wendish, in Lusatia, is very great. In Pomerania, the last person who spoke that language died in 1404. Only between the Elbe and Iretze, a remnant of Obotrites (called *Polabes*, from *Labe*, Elbe, and *po*, dwelling) maintained itself till recent times; and, in 1751, the last religious service in Wendish took place in Wustrow. These Wends existed, indeed, in the latter half of the last century; but the government laboured to destroy the peculiarities of language and customs by which they were distinguished from their German neighbours. The language was so ridiculed, that people became ashamed to speak it. Some customs and modes of dress still exist in many places, which remind us of the Wendish origin of their inhabitants, although German only is spoken there at present, as in Altenburg. The Wends were a warlike people, and waged war against the Germans, at different periods, from the seventh century, several times in connexion with the Bo-

hemians, and, at a later period, with the Hungarians, until, in 934, Henry I. defeated them, at Merseburg, and Otho in 948. The German kings then erected the margraviates of Misnia, Northern Saxony and Lusatia, to keep these Sclavonians in obedience. The religious foundations at Misnia, Merseburg, Zeitz, and Magdeburg, were also established, partly with a view to propagate the Christian religion among the Wends. They were driven from their towns to the villages; the prisoners of war were given to chapters, convents, and noblemen, as villeins. All possible means were used to make the Wends adopt the Christian religion, and to blend them into one people with the Germans. In 1047, Gottschalk established a Wendish or Obotritish kingdom, consisting of eighteen provinces, under the Saxon dukes and the German kings, and strove to introduce German civilization, but, for that reason, was murdered in 1066. His son Henry re-established the kingdom in 1105, which, at a later period, Knud, duke of Sleswic, received as a fief, after whose death it was broken up. The introduction of Christianity among the Wends was gradually effected, though traces of heathen worship long remained. The Wends of Lusatia at present occupy a tract extending from Löbau to the mark of Brandenburg. They are industrious, but, in consequence of their former oppression, suspicious and reserved. Their language enables them to make themselves understood by the Poles and Russians. In Leipsic, there is a society in which students from Lusatia practise preaching in Wendish. It is a curious fact, that only about three miles from Berlin there is a village called Rixdorf, inhabited by Wends, many of whom, though in constant intercourse with Germans, and going daily to the market of Berlin to sell their produce, nevertheless, were wholly ignorant of the German language until lately, when their unwillingness to intermarry with Germans has given way to more rational notions.

WENTWORTH. See *Strafford*.

WERF, Adrian van der, a Dutch painter, born near Rotterdam, in 1659, of poor parents, was first instructed in his art by Piccolett, a portrait painter, and afterwards became a pupil of Van der Neer. Having settled at Rotterdam, he obtained great reputation as a painter of portraits, and executed a piece for Steen, a rich merchant of Amsterdam, which procured him the patronage of the elector palatine. That prince, having visited Holland with his family in 1696, went to Rotterdam, and ordered Van der Werf to paint for him the Judgment of Solomon, and his portrait. The artist took the pictures to Düsseldorf when they were finished; and the elector wished to retain him in his service, but he only engaged himself for six months in the year, receiving a handsome pension. In 1703, he went to present to his patron his Christ carried to the Sepulchre, which is regarded as his best production. He was honoured with knighthood by the elector, who treated him with great liberality, augmenting his pension, and bestowing on him many marks of his esteem. He died at Rotterdam, Nov. 12, 1722. Van der Werf was particularly noted for his small historical pieces, which are most exquisitely finished, and which are still in high request, though his reputation is not quite equal to what it was during his life.—His brother and pupil, *Peter van der Werf*, painted portraits and conversation pieces, and was a very able artist. He died in 1718, aged fifty-five.

WERNER, Abraham Gottlob; a celebrated mineralogist, born in Germany, Sept. 25, 1750. His father was overseer of iron works in Upper Lusatia; and the son being intended for the same employment, was sent, after some previous education at school, to the mineralogical academy at Freyberg. Thence he removed to Leipsic, where he applied himself to natural history and jurisprudence, but more especially to the former, which he found the most attractive. The external characters of mineral bodies attracted much of his attention; and, in 1774, he published a work on that subject, considered as the basis of his oryctognostic or mineralogical system. It has been translated into various languages, and adopted and commented on by other writers; but the author could never be persuaded to publish a new and enlarged edition. Soon after this publication, Werner was invited to become keeper of the cabinet of natural history at Freyberg, and to deliver lectures on mineralogy. In 1780, he published the first part of a translation of Cronstadt's Mineralogy; and, in his annotations on this work, he gave the first sketch of his mineralogical system, and published many descriptions in conformity with the methods proposed in his treatise on external characters. In 1791, appeared his Catalogue of the mineral Collection of Pabst von Ohain. Besides his lectures on mineralogy, he also delivered lectures on the art of mining, which he rendered peculiarly intelligible and interesting by his simplification of the machinery, and by drawings and figures. His system of geognosy, or geology, was unfolded only in his lectures; but those he caused to be written out by his approved pupils, and, revising them himself, he communicated authority to their manuscripts. Many parts of these lectures have been published in different countries. Werner himself likewise published some mineralogical papers in the Miner's Journal; and, in 1791, appeared his New Theory of the Formation of Metallic Veins, which was translated both into French and English. He was nominated counsellor of the mines of Saxony in 1792, and had a great share in the direction of the academy of mineralogy, and in the administration of public works. The cabinet of minerals which he had collected was unrivalled for its completeness and arrangement, consisting of one hundred thousand specimens. This he sold to the mineralogical academy, for about £6300, reserving the interest of £5175 as an annuity to himself and his sister, who had no children, and at her death to revert to the academy of Freyberg. He died, unmarried, in August, 1817. A knowledge of the Wernerian mineralogy was first introduced into England by Kirwan; but a more complete view of it is exhibited in professor Jameson's System of Mineralogy, 1804, second edition, 1817. As a geologist, Werner is scarcely entitled to the merit of originality, as his geognosy consisted more in the invention of a new language adapted to support a theory, than in the exhibition of novel facts, or the discovery of a new and practical method of investigation. (See *Geology*.) But the science of mineralogy is highly indebted to his labours; and in having given a definite and systematic arrangement of mineral bodies, showing their characteristic analogies, he has done that for the branch of natural knowledge he cultivated, which Linnæus did for the science of botany, and thus attached a permanent celebrity to his name. See *Mineralogy*.

WESEL; a fortified town in the government of Cleves, in the Prussian dominions on the Rhine at

the entrance of the Lippe into that river, fifteen miles north-west of Gueldres, seventeen east-south-east of Cleves; lon. 6° 37′ E.; lat. 51° 29′ N.; population, including the garrison, 12,000. It is strongly fortified, was once a Hanseatic town, and has considerable commerce, navigation and manufactures, particularly of spirituous liquors. It contains a gymnasium, a theatre, four parish churches, &c.

WESER, one of the large rivers of Germany, originates from the union of the Werra (the source of which is in Hildburghausen) and the Fulda, which rises in the grand duchy of Fulda. At Münden, in Hanover, they unite, and are called *Weser*, which is believed to be only a contraction of the original name of the Werra (*Wisaraha*, *Wesara*, *Wirraha*). The Weser passes through the Hanoverian principality of Göttingen, Brunswick, the principality of Calenberg, Schauenburg, the Prussian province of Westphalia, Hoya, Verden, Bremen, and the duchy of Oldenburg, and empties into the North sea, ten German or about forty-five English miles below Bremen, after having received several other rivers. The twenty-two tolls on the Weser are extremely harassing and injurious to internal commerce. One single toll, that of Elsfleth, which at present is abolished, produced annually 80—100,000 German dollars. The history of the exactions and injustice connected with the tolls of one such river would show how little regard has been paid to the interest of the people. In 1817, a project was formed for uniting the Weser and the Elbe. The most important cities on the Weser are Münden, Hameln, Rinteln, Minden, Nienburg and Bremen.

WESLEY, John, the second son of Samuel Wesley, rector of Epworth, was born at Epworth, June 17, 1703. He received his school education at the Charter-house, whence he was removed to Christ-church college, Oxford. After taking his first degree, he was, in 1724, elected fellow of Lincoln college, and, in 1726, graduated master of arts. At this time, he was distinguished for his classical attainments, skill in dialectics, and talent in poetry. Soon after he was elected fellow, he was appointed Greek lecturer, and took pupils; and, in 1725, he was ordained by bishop Potter. For some time after his residence at Oxford, he was only distinguished as a grave, sedate young man; but after a while, the perusal of some devotional tracts, and more especially Law's Serious Call, induced him to consecrate himself more entirely to what he deemed the essentials of a holy life. In 1729, he associated with some friends of similar disposition, who met and read together the classics on week-days, and divinity on Sundays; but shortly after, their meetings became exclusively religious. This society consisted of fifteen members, who, from the strictness of their manners and deportment, were variously designated by the other students, but more especially obtained the name of *Methodists*, which appellation they themselves sanctioned and retained. (See *Methodists*.) His father wished him to make interest for the next presentation of his living of Epworth; but he was too much attached to Oxford, and the manner in which he was engaged, to listen to his advice. A mission to Georgia had soon after greater attractions, and, in 1735, he accepted the invitation of doctor Burton, one of the trustees for that newly founded colony, to go over and preach to the Indians. He accordingly embarked the same year, in company with his brother Charles, two other missionaries, and several German Moravians. The disturbed state of the colony prevented all preaching to the Indians; and, although the colonists of Savannah were at first attentive to the ministry of Mr Wesley, his notions were too high church for his hearers. He refused the Lord's supper to dissenters, unless they would be rebaptized, insisted upon immersion in the rite of baptism, and, hy a variety of ascetical practices, excited an unfavourable opinion of his judgment. What most injured his reputation, however, was his conduct towards a young lady, whom it was expected he would marry, and whom he refused to admit to communion after her marriage with another person, without deigning to assign any reason. Legal proceedings were in consequence commenced against him, previous to the conclusion of which, after a consultation with his friends, he became convinced that "God called him to return to England;" on which he gave public notice of his intention to depart, and left Georgia after an abode of a year and nine months. On his arrival from America, he discovered that he, who had been voyaging to convert others, had never been converted himself; and he felt, as he observed, "a want of the victorious faith of more experienced Christians." This conviction appears to have been strengthened by a German Moravian missionary, with whom he much communed, until at length, a sudden conversion occurred, hy his own account, on the twenty-fourth of May, 1738, at a quarter before nine in the evening, while a person in a society in Aldersgate street was reading Luther's preface to the Epistle to the Romans. To strengthen his faith, he went over to Germany, and proceeded to Herrnhut. (q. v.) He returned in September, 1738, when he commenced the systematic labours which made him the founder of the great religious body of Methodists. He began to exhort and to preach, often three or four times a day, at the prisons and other places, in the metropolis, and made frequent excursions into the country, where his followers became rapidly very numerous. His discourses were often attended with demonstrations of the effect produced on the hearers, such as swoonings, outcries, convulsions, and similar results of violent internal emotion and excitement. He soon after accepted the invitation of Whitefield, who had sometime before commenced the practice of field preaching, to join him at Bristol; and, in May, 1739, the first stone of a Methodist meeting-house was laid in that city. Some difficulties, which arose as to the liability of the feoffees, nominated, in the first instance, to the expenses of erection, by inducing Mr Wesley to take it all into his own hands, laid the foundation of the unlimited powers which he obtained over his followers. Whatever chapels were subsequently built by the connexion, were all either vested in him or in trustees bound to give admission to the pulpit as he should direct. It is thought that his original plan was to form a union of clergymen in order to further his scheme of conversion by their joint efforts; but the dislike of ministers of the establishment to join in it, reduced him to the necessity of appointing lay preachers, and employing them as itinerants among the different societies of the persuasion. At the same time, he assumed the power of nominating those preachers, and thus, as the societies increased, his authority received indefinite augmentation. The opinions of Wesley, being derived from the Arminian theology, differed materially from those of Whitefield on the points of unconditional election, irresistible grace, and final perseverance; in conse-

quence of which a coldness grew up between them, and a lasting separation between the societies over which they presided. Nothing so much favoured the progress of Wesleyan Methodism, as the strict and orderly discipline established by the founder, commencing from the small division of classes, and ending in the annual conferences of the numerous preachers. The whole was very wisely calculated to bind the society to each other. The society, in its infant state, had to contend with much popular hatred, sometimes fomented by persons in the upper ranks of society. The followers of both Whitefield and Wesley were, in the first instance, chiefly among the uneducated classes. In 1749, he married a widow of good fortune, which was, however, all settled upon herself; but the union was an unhappy one, and terminated in a final separation, in 1781. On the breaking out of the American disputes, he wrote a pamphlet on the side of government, entitled a Calm Address to the American Colonies, which produced a considerable effect among his own followers. When the contest terminated in separation, he took a step which appeared a renunciation of the principles of the Episcopal church, by ordaining preachers for America, by imposition of hands, and consecrating a bishop for the Methodist Episcopal church. By this step he offended many of the society, and especially his brother Charles; and it is asserted that he himself repented it, as likely to further that separation from the church, which, after his death, virtually took place. The approach of old age did not in the least abate the zeal and diligence of this extraordinary person, who was almost perpetually travelling, and whose religious services, setting aside his literary and controversial labours, were almost beyond calculation. Besides his numerous exhortations, he generally preached two sermons every day, and not unfrequently four or five, all which he was enabled to effect by very early rising and the strictest punctuality. His labours were continued to within a week of his death, which took place March 2, 1791, in the eighty-eighth year of his age. John Wesley had a countenance wherein mildness and gravity were very pleasingly blended, and which, in old age, appeared extremely venerable. In manners, he was social, polite and conversible, without any gloom or austerity. In the pulpit, he was fluent, clear, and argumentative; often amusing, but never aiming at, or reaching, like Whitefield, the eloquence of passion. His style in writing was of a similar description, and he seldom appeared heated, even in controversy. The works of John Wesley, on various subjects of divinity, ecclesiastical history, sermons, biography, &c., amounted, even in 1774, to thirty-two volumes, octavo. In addition to the accounts of Wesley by Hampton, Whitehead, and Southey, there is a more recent life of him by Henry Moore.

WESLEY, Charles, younger brother of the above, was born at Epworth, Dec. 18, 1708, educated at Westminster school and Christ-church, Oxford, where he graduated master of arts in 1732, accompanied his brother to Georgia, and also became a preacher in the Methodist connexion, for which he wrote hymns, now sung in their chapels. Some of his sermons have been printed; and his poetical compositions exceeded those of his brother, from whom he differed on various points. His son, *Charles*, born in 1757, displayed, even in infancy, an astonishing genius for music. At the age of two years and three quarters, he astonished his father, by playing readily, and in correct time, a tune upon the harpsichord; with which instrument his mother, almost from his birth, had been accustomed to quiet and amuse him. It is a curious circumstance that he would never suffer her to play with one hand, but, even before he could speak, would place her other hand on the keys, to complete the harmony of the piece, by the addition of the bass. From the earliest moment of his performances, he always added a true bass to every tune which he played. At the age of twelve or thirteen, it was thought that no person could excel him in playing the works of Corelli, Scarlatti, and Handel, to the study of which he had almost wholly confined himself for some years. He then visited London, and received instructions in composition from doctor Boyce; and under the inspection of that gentleman he published his first production, a Set of Six Concertos for the Organ or Harpsichord. He afterwards ranked among the first musical professors of England.

WESSELING, Peter, born at Steinfurt, 1692, an eminent critic, presided over the gymnasium of Middleburg, was afterwards a professor in the university of Franecker, and, at length, occupied the chair of eloquence at Utrecht. Besides other works, he published *Observationum variarum Libri duo* (Amst., 1727, 8vo.); *Probabilium Liber singularis* (Franecker, 1731, 8vo.); *Antonini Itinerarium* (Amst., 1735, 4to.); *Dissertatio Herodotea* (Utrecht, 1758, 8vo.); and a valuable edition of Herodotus, with annotations (Amst., 1763, folio.) He died at Utrecht, in the year 1764.

WESSEX, that is, WEST SAXONY; one of the most important of the kingdoms of the Saxon heptarchy in England, during the sixth, seventh, and eighth centuries. Egbert, king of Wessex, founded the kingdom of England, by the union of the other kingdoms of the heptarchy. See *Egbert* and *England*.

WEST, Benjamin, was descended from a respectable English family, belonging to the denomination of Quakers, who had emigrated to America in 1667. His father, John West, was a merchant, settled at Springfield, in Pennsylvania, where Benjamin was born, Oct. 10, 1738, being the tenth child. In his seventh year, he gave the first indications of his propensity for the pencil. As he was watching the sleeping infant of his elder sister, it smiled, and, struck with its beauty, he sought some paper, and drew its portrait in red and black ink. The circumstances, however, in which he was placed, afforded him little aid in the development of his talents. There were neither professors, paintings, nor prints among the primitive settlers of Pennsylvania. For some time, he pursued his favourite employment with red and yellow colours, (which he learned to prepare from some Indians who had roamed to Springfield), and indigo, given to him by his mother, together with brushes made of the hair of a cat. At length, a merchant named Pennington, who was his cousin, having seen his sketches, sent him a box of paints and pencils, with canvass prepared for the easel, and six engravings. The possession of this treasure almost prevented him from sleeping. He made all the necessary arrangements in the garret, where he commenced his labours with the dawn every morning, absenting himself entirely from school, until the inquiries of his master caused a search and discovery to be made. His mother found him in his *studio;* but her inclination to anger soon subsided on beholding his performance. Instead of copying servilely, as might have been

expected, he had composed a picture from two of the engravings, telling a new story, and coloured with a skill and effect which, in her eyes, were surprising. She kissed him with rapture, and procured his pardon from her husband and his teacher. Mr Galt, in his life of West, says that, sixty-seven years afterwards, he had the gratification to see this piece in the same room with the sublime picture of Christ Rejected; on which occasion the painter declared to him, that there were inventive touches, in his first and juvenile essay, which, with all his subsequent knowledge and experience, he had not been able to surpass. By degrees, the report that a boy, remarkable for his talent for painting, lived at Springfield, began to extend, until it reached the ears of Mr Flower, a justice of Chester, who, having looked at his works, obtained leave from his parents to take him, for a few weeks to his house. Whilst residing with this gentleman, he derived great advantage from the conversation of the governess of his daughters, a young English lady, well acquainted with art, and with the Greek and Latin poets, and who loved to point out to the young artist the most picturesque passages. During his residence there, he painted the portrait of the wife of a lawyer of the neighbouring town of Lancaster, the sight of which made people come in crowds to sit to him for their likenesses. He likewise executed a painting of the death of Socrates, for a gunsmith of Lancaster, who had a classical turn. On his return to Springfield, his future career became the subject of anxious consideration; and, finally, the matter was submitted, by his parents, to the wisdom of the society to which they belonged. A deliberation was accordingly held, the result of which was, that, though the Quakers refuse to recognise the utility of painting to mankind, they allowed the youth to follow the vocation for which he was so plainly destined. Soon afterwards, however, he took a step utterly at variance with the principles of the sect; but, strange as it may seem, he received neither admonition or remonstrance. This was to join the troops under general Forbes, who proceeded in search of the relics of the army of general Braddock. He was called home in a short time, by intelligence of the illness of his mother, and arrived only in time to receive the welcome of her eyes and her mute blessing. This was a severe blow, for he was devotedly attached to her. In his eighteenth year, he removed to Philadelphia, where he established himself as a portrait painter. His success was considerable; and, after painting the heads of all who desired it in that city, he repaired to New York, where his profits, were, also, not insignificant. In 1760, by the kindness of some friends, he was enabled to proceed to Italy; and, July 10, of that year, he reached Rome. There he obtained access to some of the most distinguished personages, and first made himself known as an artist by a portrait of Lord Grantham, which was attributed, for a time, to Mengs. After recovering from an illness of eleven months' duration, he visited the different cities of Italy for the purpose of inspecting the works of the great masters scattered through them. After his return to Rome, he painted a picture of Cimon and Iphigenia, and another of Angelica and Medora, which increased his reputation, and opened the way to those marks of academic approbation usually bestowed on fortunate artists. He was elected a member of the academies of Parma, Florence, and Bologna, to the former of which he presented a copy of the St Jerome of Correggio, of great excellence. In 1763, he went to London, intending to proceed to his native country; but, finding that there was a great probability of his success as a historical painter in that metropolis, he established himself there. His rise was rapid. He was introduced to the king, George III., whom he ever found a steady friend and munificent patron, and by whom, on his first presentation, he was directed to paint the picture of the departure of Regulus from Rome. Lord Rockingham made him an offer of a permanent engagement, with a salary of £700 a year, to embellish, with historical paintings, his mansion in Yorkshire; but he preferred depending on the public. He continued to be the king's painter until the monarch became superannuated, executing numerous works on historical and religious subjects, besides a few portraits. On the death of Sir Joshua Reynolds, he had been elected president of the royal academy, and took his place, March 24, 1792. He delivered an address on the occasion, which was much applauded. When George III. was first seized with the mental malady which incapacitated him for the duties of government, West was engaged in executing various religious pictures for the chapel at Windsor; but when that event occurred, he was informed that his labours must be suspended until further orders. On the recovery of the king, he was directed to go on with the works; but, on the recurrence of his illness, he was again ordered to suspend them. The story of his dismissal from court was spread abroad, with many aggravations, by the malevolence of enemies whom his success had created; and injurious statements were circulated respecting the sums which he had received for his pictures. In consequence, he published an account of what he had obtained, which was no more than a just compensation for his labours. During the peace of Amiens, he went to Paris, for the purpose of beholding the splendid collection, which Napoleon had placed in the Louvre, of the masterpieces of art, and was treated, in that city, with the greatest distinction by the most prominent persons of the imperial court. Soon after his return to London, he retired from his seat as president of the royal academy, where he had to encounter an opposition strong in numbers and ability; but, in a short time, he was restored to it by an almost unanimous vote, there being but one dissenting voice. In his sixty-fifth year, he painted the celebrated picture of Christ healing the sick, for the Quakers of Philadelphia, to aid them in the erection of an hospital in that town. It was exhibited in London, where the rush to see it was very great, and the opinion of its excellence so high that he was offered 3000 guineas for it by the British institution. As he was far from being rich, he accepted the offer, but on condition that he should be allowed to make a copy, with alterations, for Philadelphia. He did so; and the work is still exhibited in that city, where the profits arising from it have enabled the committee of the hospital to enlarge the building and receive more patients. The success of this piece impressed him with the belief that his genius appeared to most advantage in pictures of large dimensions. "As old age," says Allan Cunningham, "benumbed his faculties, and began to freeze up the well-spring of original thought, the daring intrepidity of the man seemed but to grow and augment. Immense pictures, embracing topics which would have alarmed loftier

spirits, came crowding thick on his fancy; and he was the only person who appeared insensible that such were too weighty for his handling." He painted several works of great size; but few were willing to be purchasers of pictures which occupied so much room. Domestic sorrow mingled with professional disappointment. His wife, with whom he had lived for some sixty years in uninterrupted happiness, died December 6, 1817. He did not survive her many years. Without any definite complaint, his mental faculties unimpaired, his cheerfulness unclipsed, and with looks serene and benevolent, he expired March 11, 1820, in the eighty-second year of his age. He was buried beside Reynolds, Opie and Barry, in St Paul's cathedral.

West was in person above the middle size, of a fair complexion, and firmly and compactly built. He ever preserved a sedate sobriety of sentiment, and happy propriety of manners, the results of a devout domestic education. In disposition, he was mild, liberal, and generous. He seriously impaired his fortune by his kindness to young artists, whom he endeavoured to assist in every way. The advice which he gave them in his discourses from the president's chair was marked by good sense and affection. The following extract in relation to his paintings is from the biography of him, written by Allan Cunningham:—"As his life was long and laborious, his productions are very numerous. He painted and sketched upwards of 400 pictures, mostly of a historical and religious nature, and left more than 200 original drawings in his portfolio. His works were supposed, by himself, and for a time, by others, to be in the true spirit of the great masters; and he composed them with the serious ambition and hope of illustrating Scripture, and rendering gospel truth more impressive. No subject seemed to him too lofty for his pencil: he considered himself worthy to follow the sublimest flights of the prophets, and dared to limn the effulgence of God's glory, and the terrors of the day of judgment. In all his works the human form was exhibited in conformity to academic precepts; his figures were arranged with skill; the colouring was varied and harmonious: the eye rested pleased on the performance; and the artist seemed, to the ordinary spectator, to have done his task like one of the highest of the sons of genius. But below all this splendour, there was little of the true vitality; there was a monotony, too, of human character; the groupings were unlike the happy and careless combinations of nature; and the figures seemed distributed over the canvas by line and measure, like trees in a plantation. He wanted fire and imagination to be the true restorer of that grand style which bewildered Barry, and was talked of by Reynolds. Most of his works, cold, formal, bloodless and passionless, may remind the spectator of the sublime vision of the valley of dry bones, when the flesh and skin had come upon the skeletons, and before the breath of God had adorned them with life and feeling. Though such is the general impression which the works of West make, it cannot be denied that many are distinguished by great excellence. In his Death on the Pale Horse, and more particularly in the sketch of that picture, he has more than approached the masters and princes of the calling. It is, indeed, irresistibly fearful to see the triumphant march of the terrific phantom, and the dissolution of all that earth is proud of beneath his tread. War and peace, sorrow and joy, youth, and age, all who love and all who hate, seem planet-struck. The Death of Wolfe, too, is natural and noble, and the Indian Chief, like the Oneida warrior of Campbell, 'a Stoic of the woods, a man without a tear,' was a happy thought. The Battle of La Hogue I have heard praised as the best historic picture of the British school, by one not likely to be mistaken, and who would not say what he did not feel. Many of his single figures, also, are of a high order. There is a natural grace in the looks of some of his women which few painters have ever excelled."—See Galt's *Life and Studies of Benjamin West* (London, 1816 and 1820); and Cunningham's *Lives of Eminent British Painters*.

WEST, GILBERT, an ingenious author, was the son of doctor West, editor of Pindar's works, and was born in the year 1706. He was sent to Oxford, and afterwards obtained a commission in a cavalry regiment. He did not, however, long remain in the service, retiring to Wickham, in Kent, where he devoted his time to literary pursuits and the enjoyment of the society of his friends. The patronage of Mr Pitt obtained him, in 1751, the situation of clerk to the privy council, he having previously held a deputy's place nearly twenty years. The treasurership to Chelsea college was afterwards added through the same interest. On the death of an only son, in 1755, his grief induced a paralytic affection, which carried him off in the following year. His Observations on the Resurrection were printed in 1747. His other writings are a poem on the Institution of the Order of the Garter, and a translation of some of the Odes of Pindar.

WEST INDIA APRICOT. See *Mammee Tree*.

WEST INDIES; the extensive archipelago which lies between North and South America, stretching from the coast of Florida, in the twenty-eighth degree, to the shores of Venezuela, in the tenth degree, of north latitude. It is divided by geographers into the Bahamas, composed of fourteen clusters of islands and 700 keys; the Great Antilles, comprising the four largest islands of the group, Cuba, Hayti, Porto Rico and Jamaica; the Lesser Antilles, stretching from Trinidad, in a westerly direction, along the northern coast of South America; and the Caribbee islands, stretching, like a great bow, from Tobago to Porto Rico, and subdivided into the three groups known under the name of the Virgin islands, the Leeward islands and the Windward islands. Each of the divisions above mentioned, and the most important individual islands, have been described separately. The whole archipelago, with the exception of some of the Bahamas, lies within the torrid zone. The name *India* was given to them by Columbus, who first discovered them, under the notion that they formed part of India, which was the object of his search. When the mistake was discovered, they retained the name, with the prefix *West*, to denote their geographical position. (See *America*, and *Columbus*.) The seasons, as in other tropical countries, are divided between the wet and the dry; the spring begins with May, when the foliage and grass become more verdant: the first periodical rains set in about the middle of the month, falling every day about noon, and creating a rapid and luxuriant vegetation. The thermometer at this season varies considerably, but its medium height is about 75°. After these rains have prevailed about a fortnight, the weather becomes dry and settled, and the tropical summer

reigns in full glory. The heat at this time is tempered by sea breezes, the thermometer standing, on an average, at about 80°. The nights are now eminently beautiful: the moon is so brilliant that the smallest print is legible by her light; and, in her absence, her place is supplied by the brightness of the Milky Way, and the radiance of the planet Venus, which is such as to cast a shade. In the middle of August, the heat becomes excessive, and the refreshing sea breezes almost entirely intermit. This state of the atmosphere is succeeded by the autumnal rains, which become general in October, and pour down in cataracts. In the interval between August and October, the islands are visited by those tremendous hurricanes, which effect so much mischief. (See *Hurricanes.*) Towards the end of November, a change takes place: the weather becomes serene and pleasant, and northerly and north-easterly winds prevail, constituting the finest winter on the globe, from December to May. There are some exceptions to this general description, particularly in the large islands, which are often visited by refreshing land breezes from the interior highlands. (See the articles *Cuba*, *Hayti*, and *Jamaica.*) The islands abound generally in all tropical productions, as sugar, cotton, coffee, indigo, pimento, cocoa, medicinal drugs, tobacco, maize, guava, plantain, cacao, &c.; oranges, lemons, limes, pomegranates, citrons, pine-apples, &c.; manioc, yams, potatoes, &c. The mountains contain great varieties of trees, adapted for cabinet-work, ship-building, and other purposes in the arts, such as cedars, mahogany, lignum-vitæ, iron-wood, the Indian fig-tree, the calabash-tree, &c. The indigenous quadrupeds are the agouti (a sort of intermediate species between the rabbit and the rat), the peccary or Mexican hog, the armadillo, the opossum, the raccoon, the musk-rat, the alco or American dog, and several of the smaller varieties of monkey. Most of these species are now extinct in these islands. The iguana, a species of lizard, and the mountain crab, are also found here. The birds are remarkable for the brilliancy and beauty of their plumage: among them are the parrot, in many varieties, the scarlet flamingo, and the glittering humming-bird, with a great number of waterfowl of different kinds. Of the serpent tribe there are many varieties; but few, if any, are venomous: the alligator, and the brilliant and changeable gobemouche, or fly-catcher, are among the lizards.

The West Indies were discovered by Columbus, in his first voyage, in 1492: their subsequent history will be found under the separate articles. (See, also, *Buccaneers.*) The islands were inhabited, at the time of their discovery, by two distinct races of natives, the Caribs, occupying the Windward islands, and the Arrowauks, inhabiting Hayti, Cuba, Jamaica, Porto Rico, and the Bahamas. The former were warlike and fierce; the latter mild and peaceful, and much more advanced in civilization. (See *Caribbees.*) The languages of these nations were different.—See Edwards's *History of the British West Indies* (3 vols., 1807); T. Southey's *History of the West Indies* (3 vols., 1827); and the works of Humboldt.

The West India islands are, with the exception of Hayti, still in the possession of European powers. See *Colony.*

1. *Spanish West Indies.* Spain has not retained a foot of ground on the American continent. The sole remnants of her splendid colonial empire in the new world, are the island of Cuba, the largest and finest of the West India islands, Porto Rico, with several dependencies, and Passage, Serpent, and Bieque or Crab islands, among the Virgin islands. The Spanish part of St Domingo now forms part of the Haytian republic, and the islands of Margaritta, with Blanquilla, Tortuga, &c., belong to the republic of Venezuela.

2. *French West Indies.* Previously to the insurrection of 1792, St Domingo was the most valuable French colony in the West Indies; but that event resulted in the establishment of the independence of that island, under the name of Hayti. Having sold Louisiana to the United States, and ceded other colonies to the British, France now possesses only Guadaloupe and Martinique, with the small islands of Mariegalante and Deseada, in the West Indies.—See *Les Antilles Françaises, particulièrement Guadeloupe*, by Bover-Peyseleau (3 vols., Paris, 1823).

3. *Danish West Indies.* The Danes possess only the small islands of St Thomas, St Croix, or Santa Cruz, and St John, belonging to the Virgin islands.

4. *Swedish West Indies.* The Swedes possess only one colony, the small but fertile island of St Bartholomew.

5. *Dutch West Indies.* To the kingdom of the Netherlands belong the islands of Curaçoa, St Eustatius, Saba, and part of St Martin, with the smaller islands of Aruba, Aves, and Banaire. Curaçoa, formerly important as an entrepot, has lost a considerable portion of its trade since the South American revolution, as the goods intended for the continent are forwarded direct to their place of destination.

6. *British West Indies.* These are, Antigua, Barbadoes, Dominica, Grenada, Jamaica, Montserrat, Nevis, St Kitts, St Lucia, St Vincent, Tobago, Tortola, Anguilla, Trinidad, Bahamas, and Bermudas.

A great revolution has recently taken place in the whole economy of these islands, by the total abolition of slavery. In order to obtain the latest intelligence of the result of this great measure, we defer the subject to the Supplement.

WEST POINT; a village of New-York, and military post, on the west bank of the Hudson, where it passes through the Highlands, in the township of Cornwall, in Orange county, fifty-three miles, by water, above New-York, and one hundred below Albany. During the revolutionary war, this point was strongly fortified, and deemed one of the most important fortresses in America. The plain that forms the bank of the river is elevated 188 feet; and fort Putnam, a short distance in its rear, is 598 feet. Most of the former works are now in ruins. The *military academy* consists of the corps of engineers; of one professor and an assistant professor of natural and experimental philosophy; one professor and an assistant professor of mathematics; one professor and an assistant professor of the art of engineering, in all its branches; a chaplain and professor of ethics; a teacher of drawing; a surgeon; and a sword-master. The number of cadets is limited to 250.

WEST PRUSSIA; previous to 1772, called *Polish Prussia*, because it belonged to that part of Prussia which the crown of Poland had reserved, when it invested Albert of Brandenburg with the duchy of Prussia, in 1525. (See *Prussia.*) Dantzic, Thorn and Elbing were the principal towns of Polish Prussia. In 1772, Frederic II. took posses-

sion of it, (see *Poland*), with the exception of Dantzic and Thorn, which fell into his hands in 1793. By the peace of Tilsit, a part of it was ceded to France, and one portion of the ceded territory was annexed to the duchy of Warsaw, Dantzic being erected into a free city; but, in 1815, it was restored to Prussia by the congress of Vienna. It now constitutes a Prussian province, with a population of 792,207 souls, and is divided into the two governments of Dantzic and Marienwerder, with chief towns of the same name.

WESTERN EMPIRE. Theodosius the Great, the last sole sovereign of the whole Roman empire, shortly before his death, divided, by his will, that immense extent of territory between his sons, Arcadius and Honorius, neither of whom was then of age, the former being eighteen years old, and the latter only eleven. Arcadius was to possess the East (see *Byzantine empire*); his brother, the West; which comprehended Italy, Africa, Gaul, Spain, Britain, and half of Illyria. The empire, thus divided, was to be ruled in common, according to the direction of Theodosius, by the two brothers; but the reunion of both crowns upon one head was to remain lawful, for it had not escaped the penetrating mind of the emperor, that such a union could alone preserve the empire from ruin. At the death of Theodosius, January 11, 395, the guardians appointed for his sons entered upon their duties; the minister Rufinus, a Gaul, ruling for Arcadius, and the commander-in-chief, Stilicho, a Vandal, (by marriage, a nephew of the late emperor), for Honorius. Rufinus was soon overthrown by the superior power of the general, and the plans of the latter were afterwards frustrated by the artifices of the court of Constantinople. Stilicho, did, indeed, at the wish of Rufinus, divide the territories, the army, and the immense treasures left by the emperor; but he had no intention of yielding to him one half of the power of regent, as guardian to the young emperor of the East. The general had taken the command of the portion of the troops belonging to Arcadius, ostensibly to lead them to their proper commander, but in fact to secure to himself the command of all the forces of both portions of the empire. He had already reached Thessalonica, on the way to Constantinople, when Rufinus, dreading above all things his appearance in person, sent orders to him to halt, with the declaration that every step he took nearer the capital would be deemed an act of hostility. Stilicho was too prudent to disobey openly; but he was determined to remove out of his way a rival bold enough to oppose him, the general and deliverer of the imperial house. Gainas, a Goth, appointed by him general of the army of the East, received his orders; and Rufinus, in the presence of the army, already prepared for such an event, was assassinated on the field of Mars, before Constantinople, by an audacious soldier, under the eyes of the emperor Arcadius. But Stilicho was still farther than before from the object of his wishes. The sagacious courtier Eutropius, first chamberlain and principal favourite of Arcadius, and the empress Eudoxia, as remarkable for her talents as for her charms, were too pleased with the power which they exercised over the weak prince, to allow the general an influence which might become dangerous to the favourite. Arcadius himself might also prefer the mild sway of the courtier, and of his beautiful wife, to that of the stern and able soldier. The dependence of the troops, and of their general Gainas, was secured; and after every means had been tried to injure Stilicho in the public opinion, a decree of the senate of Constantinople was procured, declaring him an enemy of the state, and all his possessions within the limits of the East forfeited. Attempts were made upon his life, but without success. This hostility against the regent of the Roman dominions in the West, gave the first signal for a division of the empire; and the wise views of the prudent Theodosius failed through the passions of a few men, and the weakness of his two young sons, who were unable to restrain them. Stilicho might perhaps have opened the way to the palace of Arcadius with the sword; but the terrible image of a civil war restrained the ambition of a man who certainly could not be charged with want of boldness. He now devoted himself entirely to the interests of his pupil Honorius, and to the government of his dominions. After the rebellious governor of Africa, Gildo, had been conquered by his own brother, the Moorish prince Mascezel, who revenged upon the tyrant the murder of his two children, and when he had himself ended his campaign in Greece against the Goths, Stilicho married his daughter Maria to her cousin, the emperor Honorius, then in his fourteenth year, in the year 398 of the Christian era. Ten years after, she died, as the historians say, still a virgin. Two years after this marriage, Alaric, king of the Visigoths, who had been prevented by Stilicho, in the year 397, from subduing Greece, resolved to avenge himself, and in the year 400, attacked Italy. Honorius fled from Milan to the castle of Asta (now *Asti*), upon the Tanarus. Being besieged there, he was on the point of a shameful surrender, when Stilicho, who had collected the scattered troops of the West, passed the Adda, and saved Italy. Alaric's camp at Pollentia, with the treasures collected in Greece, and Alaric's wife, became the prey of the conqueror. Nevertheless, the king of the Goths marched to Rome. In vain did Stilicho offer to restore his treasures and his wife to induce him to retreat. Another battle was fought at Verona, in the year 403, and Alaric, after an entire defeat, in which he came near losing his life, saw himself obliged to leave Italy. In 404, Honorius, with the victorious Stilicho at his side, entered ancient Rome in triumph. The city received its emperor with rejoicings; and he perpetuated the memory of his presence by an edict suppressing the fights of gladiators at the public games. After a visit of some months, Honorius left Rome to live more securely in the fortified city of Ravenna. Two years later, Radagaisus, at the head of 200,000 Germans, Sarmatians, and other warriors, broke through the Alps, and advanced to Florence. Stilicho, who had been busily forming an army, without being able to prevent the ravages of the barbarians, hastened, with 40,000 men, to support the failing strength of the empire. He enclosed Radagaisus by a chain of forts, supplied the suffering Florence with means of subsistence, while the barbarians were exposed to hunger, and at last, in a general attack, completed by the sword what famine had begun; Radagaisus was taken and executed; the other prisoners were sold as slaves. Thus was Italy a second time delivered; but these repeated blows shook the tottering pillars of the empire. The remainder of the barbarian army invaded Gaul in 407, and the Germans, Vandals, Alans, and Suevi, soon became masters of seven Gallic provinces and

of the Rhine, at that time without troops, as Stilicho had collected them to conquer in the fields of Florence. At the same time, the Roman army in Britain revolted, and determined to give themselves an emperor; but the third one chosen, Constantine, a common soldier, whose name was the cause of his elevation, alone maintained himself. His two predecessors Marcus and Gratian, perished by the dagger, after a few months of power. Constantine landed at Boulogne, and the Gallic provinces, forsaken by Honorius and conquered by the Germans, willingly submitted to him. The Goth Sarus, who was charged to bring the rebel's head to Ravenna, thought himself fortunate, after an attack of seven days upon the lines of the sovereign of Gaul and Britain at Vienne, to lead back his exhausted army across the Alps, which now formed the barrier between Honorius and Constantine. The latter, shortly after, in 408, added to his new kingdom that of Spain, (where he had experienced a slight resistance from four relations of the deceased emperor Theodosius, who lived there in opulence), and found the people well disposed to obey him. While these events were taking place between the Alps and the pillars of Hercules, others occurred at the court of Ravenna, which, after a series of misfortunes, of weaknesses, and of crimes, caused the final overthrow of the Western empire. Alaric king of the Goths, had obtained the friendship of his former opponent, Stilicho, and, in consequence of a league of peace and amity with Honorius, was appointed commander-in-chief of the Roman army in Illyria. Stilicho had long contemplated the reunion of the eastern part of this territory with the western, and wished also to employ Alaric at a distance from Italy, by directing him to the gates of Constantinople. Alaric did, indeed, make a few movements in Thessaly and Epirus; but from Æmona he sent to Ravenna a demand for the repayment of large sums, expended in the service of Honorius, and proposed that some western province should be given to him as a permanent settlement for his people, promising to reduce Constantine to submission. After violent scenes in the Roman senate, Stilicho carried his motion, that a sum of 4000 pounds of gold should be given as a subsidy to the impatient creditor. But the secret anger of the senate at this act of condescension, which was caused by Stilicho's better knowledge of the power of the Goth, was shared, and perhaps excited, by the army. Honorius began to fear his old minister. It was now insinuated to him that Stilicho intended to place his son Eucherius upon the throne: he therefore gave his consent to the execution of a man who had been thus far the sole support of the tottering empire of the West. Stilicho lost his head in the year 408. His son, and several of his friends, underwent a similar fate; and Honorius even divorced his second wife, Thermantia, second daughter of Stilicho. From this time the weak monarch found himself in the hands of favourites, who could not estimate how great a service they had rendered Alaric, by causing the death of Stilicho. The foreign mercenaries, who had been faithfully devoted to the old general, revenged his death by passing over, to the number of 30,000, to the service of Alaric. The court at Ravenna was still deliberating how it should answer the demands of Alaric, when the latter crossed the Alps, the Po, pressed forward to Rimini, seized the passes of the Apennines, and, in 408, pitched his camp before Rome, which he surrounded so completely as to reduce the city to the most deplorable extremity for want of food. When an ambassador from Rome, sent to Alaric's camp, dared to declare to him that, if he rejected an honourable capitulation, the whole population would rush out against him, the ferocious warrior answered abruptly, "The thicker the grass, the easier to mow." After having demanded an enormous ransom for the city, he was asked, "And what will you leave us, if you demand this of us?" "Your lives," was the reply. He yielded, however, in some of his demands (see *Alaric*), and left the neighbourhood of Rome, to take up his winter-quarters in Tuscany. Soon after, his army was increased to more than 100,000 men, his brother-in-law, Adolphus (Ataulf,) having fought his way to him from the Danube, with a body of Goths and Huns. After fruitless negotiations for peace with Honorius, Alaric, who had taken possession of the port and town of Ostia, marched back to Rome, where, with the consent of the people and the senate, he named a new emperor, the prefect Attalus, and took him with him to Ravenna in 409. Honorius was on the point of throwing himself into the arms of his cousin, the young emperor Theodosius, at Constantinople, when he saw his throne saved by the fidelity and wisdom of his general Heraclian in Africa, by the fidelity of his body-guard, secured by largesses, and by the imprudent measures of Attalus. Alaric himself deposed Attalus, and sent the ensigns of his dignity to Ravenna. But Sarus, the general of Honorius, attacked Alaric, killed many of his followers, and declared him an enemy of the empire, and unworthy of the alliance of his emperor. He therefore returned to Rome, which he took in the night of the 24th of August, 410, one of the gates having been opened to him by the treachery of slaves in the town. The old capital of the world was pillaged, and in part burned. The treasures of the inhabitants, including many valuable works of Roman or German art, became the prey of the barbarians. The churches and their treasures remained inviolate, by the special order of Alaric. This took place 1163 years after the building of the city by Romulus. Alaric now left Rome, and pillaged the south of Italy, where he died in 410. Adolphus, his successor, left Italy in two years, laden with the booty of Rome and of the southern provinces, after having received in marriage Placidia, the sister of Honorius. He went, in 412, to Gaul and to Spain, where he founded the kingdom of the Visigoths. Italy now breathed more freely. Rome arose proudly from its ashes; and the empire might perhaps have acquired new vigour, but for the weakness of its ruler, who lived eleven years after the departure of Adolphus. Gaul, indeed, was brought again under his power by the valour of the Roman general Constantius, who conquered Constantine, and obtained in recompense the hand of the widow of Adolphus, who had shortly before been murdered, and a share in the imperial power with Honorius. But Gaul, as well as Spain, was incessantly torn by domestic strife. Britain and Africa were lost, and the most unhappy discord reigned at Ravenna, where Placidia, a second time a widow, after the death of Augustus Constantius, was seeking to retain her power, when Honorius died, on the 24th August, 423, in the twenty-eighth year of his reign. Placidia carried the news to Constantinople, whither she had fled with her children, on account of the troubles at Ravenna. Under the protection of her

nephew, Theodosius II., the young emperor of the East, the son of Placidia and Constantius, a child of but six years, was proclaimed emperor of the West, with the title of Valentinian III. Placidia was declared regent, and maintained her power as such during twenty-five years, in which the Western empire was continually brought nearer to its fall. Under Valentinian, the Vandal kingdom was founded in Roman Africa, by Genseric, king of the Vandals, in 428. The Western empire experienced a further loss in the cession of the western part of Illyria to the emperor of the East, by which Placidia obtained in marriage for her son, Eudoxia, the daughter of Theodosius and Athenais, in 437, and likewise indemnified the court of Byzantium for the expenses of a war against John, who had been private secretary of Honorius, and, after his death, had sought to obtain possession of the throne. Attila, king of the Huns, an ally of Genseric, now demanded the hand of Honoria, sister of Valentinian, with her inheritance. From Constantinople, whither she had been banished on account of her too great intimacy with her chamberlain Eugenius, she had offered to the king of the Huns her person and her claims upon Italy. A refusal immediately caused a war, which Attila began with an attack upon Gaul, and which ended with a great battle in the Catalaunian plains (near Chalons), in 450, when the Roman general Aëtius, together with Theodoric, king of the Goths, defeated the army of Attila, and might perhaps, have entirely destroyed his power, if the political consideration of preserving in the Huns a counterpoise against the powerful Goths, had not induced Aëtius to retreat, and to separate from his ally. Thereupon Attila, to make good his claims upon the princess Honoria and her inheritance, broke into Italy, in 451, where he destroyed Aquileia, Padua, Vicenza, Verona and Bergamo. He had plundered Milan and Pavia, when Valentinian made proposals of peace by an embassy sent from Rome. The eloquence of the bishop of Rome, Leo I., who was at the head of the deputation, and the impression which his representations produced on Attila, induced him to refrain from the pillage of Rome, for a sum equal in value to the inheritance of Honoria. The beautiful Ildico made Attila forget Honoria, who, by imprisonment for life, atoned for her desire to become queen of the Huns. After the death of Attila, in 453, Valentinian might have ruled happily, had he been able to restrain his passions. The insinuations of the eunuch Heraclius made him suspect treachery in the pride of his general Aëtius. He therefore slew him with his own hand, in an altercation in the palace at Rome. He afterwards dishonoured the wife of the senator Maximus. The injured husband avenged himself, and, on the 15th March, 455, Valentinian fell on the field of Mars, with his favourite Heraclius, under the swords of two followers of the murdered Aëtius, who belonged to the emperor's body-guard. The senator and patrician Petronius Maximus was hereupon proclaimed emperor by the senate and people. He married his son to the eldest daughter of the late emperor, and obliged Valentinian's widow, Eudoxia, to espouse him. After three months, he fell a victim to her hatred. Eudoxia, unable to obtain assistance from Constantinople, called upon king Genseric, in Carthage, to deliver her from an abhorred husband. Genseric landed in the port of Ostia. The flying Maximus was stoned in the streets of Rome, and thrown into the Tiber; but the capital, again saved, by the eloquence of Leo the Great, from fire and sword, was pillaged during fourteen days. All the monuments of former times, and all the wealth collected in forty-five years, since the sack of Alaric, became the prey of the conquerors, who likewise dragged to Africa, in their ships, many thousand Romans of both sexes. While these events were taking place in Rome, Avitus, a Gaul, prefect of Gaul under Valentinian, and appointed by the emperor Maximus general of the army in that country, a man of great talents and knowledge, supported by Theodoric, king of the Visigoths, received the crown of the Western empire at Arles, August 15, 455, was acknowledged by the court of Constantinople, and also, though with secret dissatisfaction, by the senate and people of Rome. Theodoric, who went, as an ally of the Romans, to drive the Suevi from Spain, treated this country with the severity of a conqueror. Avitus rendered himself contemptible by his sensuality. Ricimer, one of the chief commanders of the mercenary troops, sent for the defence of Italy, after a victory over the fleet of the Vandals, returned, and was hailed by the people as their deliverer, and announced to Avitus, Oct. 16, 457, that his reign was ended. Avitus, condemned to death by the senate, fled, and perished in his flight. Majorian, formerly a soldier under Aëtius, was now raised by Ricimer to the imperial dignity, which he adorned by his virtue and his wisdom. Many useful regulations, especially with regard to taxes and public morals, distinguished his domestic administration, while, at the same time, he had the good fortune to defeat Theodoric, and also to obtain some advantages over Genseric, who had again attacked Italy. Nothing but the accidental loss of his fleet, in the year 460, prevented him from utterly destroying the power of the Vandals. But Rome was no longer worthy of such a ruler; and Majorian fell a victim to the general corruption, and the hatred of his enemies. Ricimer suddenly took from him the purple, and, five days after, his life, August 7, 461, having spread the report that he had died of the dysentery. A certain Livius Severus was proclaimed emperor, but was put out of the way in 465. The supreme power, in the course of these five years and the two following, during which the throne remained vacant, was solely in the hands of Ricimer, who did not, however, dare to take the imperial title. But, being pressed by the Vandals, he soon saw himself obliged to ask the assistance of the emperor of the East; and the court of Constantinople made a league with Rome, on condition that it should be left to the emperor Leo to name the ruler of the West. The Grecian patrician Anthemius was appointed, and entered the capital with great pomp, April 12, 467. He gave his daughter in marriage to Ricimer, and many interests formerly divided seemed now reunited for the welfare of Rome. But the war with the Vandals was continued with varying fortune. It cost immense sums; and soon after a misunderstanding took place between Anthemius and Ricimer, the latter of whom had marched to Milan. By the mediation of Epiphanias, bishop of Pavia, a reconciliation was, indeed, effected between them; but, shortly after, Ricimer, at the head of a large army, reinforced by the Burgundians and Suevi, appeared before Rome, proclaimed the senator Olybrius, son-in-law to Valentinian, emperor of the West, March 23, 472, and took Rome, which Anthemius had defended for three months with a people devoted to his cause. Anthemius was put to death by order of his son-in-law. July

11, the city was pillaged, and filled with the blood of its noblest citizens; and Olybrius was placed upon the throne. In the next month, August 20, the tyrant Ricimer died, and, soon after, the new emperor, October 23. Rome now saw itself exposed to the arbitrary caprice of the barbarians, at whose head was Gundobald, nephew of Ricimer, a Burgundian prince. Gundobald named Glycerius, one of his soldiers, emperor of the West, but gave him so little support, that he was displaced by Julius Nepos, a nephew of Marcellinus, and governor of Dalmatia, who had been proclaimed by the court of Constantinople. Glycerius received, instead of the empire, the bishopric of Salona (474). Shortly after ascending the throne, Nepos made peace with the Visigoths, ceding to them the territory of Auvergne; but, soon after, a rebellion of the allied barbarians, under the command of their general Orestes, obliged him to fly from Ravenna to Dalmatia. The fugitive emperor lived there five years, until he was assassinated at Salona, at the instigation of Glycerius, who received, perhaps on this account, the archbishopric of Milan. Romulus Augustus, son of Orestes, was proclaimed emperor of the West, in 476. The fall of the empire was now at hand. The German troops, Herulians, Rugians, &c., revolted under their general Odoacer, when Orestes refused to divide among them a third part of the Italian territory. Pavia, where he sought to defend himself, was taken by storm; Orestes was executed; Augustus abdicated; Odoacer was proclaimed king by his army, and the senators of Rome sent an embassy to the emperor Zeno at Constantinople to declare "that it was neither necessary, nor desirable, that Italy should any longer be governed by an emperor of its own; and therefore they acknowledged, in the name of the people, that the seat of the general government being transferred from Rome to Constantinople, they renounced the right of choosing an emperor for themselves. The republic, however, confiding in the virtues of Odoacer, humbly prayed that the emperor would grant him the title of patrician, and the administration of the Italian province." So low had Rome fallen! The emperor Zeno first gave the senate to understand that Nepos, who was still living in Dalmatia, was the lawful sovereign of Rome; but, soon after, pleased with the prospect of being sole ruler, he received the honours of the emperor of the West. The dethroned monarch, Romulus Augustus, whose first name had been changed, in Constantinople, to that of *Momyllus*, and whom the Romans called, in derision, *Augustulus*, was banished by Odoacer to the villa of Lucullus, in Campania, with a yearly pension of 6000 pieces of gold. Soon after, in the year 486, the Franks established their kingdom in Gaul. Thus the barbarians had risen in proportion as the spirit of the Romans had declined. From mercenaries of Rome they had become its allies; from allies its masters. King Odoacer ruled Italy for fourteen years. In the year 491, he was conquered by Theodoric, king of the Ostrogoths, who, in 493, founded the kingdom of the Ostrogoths on the classic ground of Italy. The name of Rome was all that remained of that empire, which had subsisted twelve centuries since its foundation by Romulus. In the history of the decline of this gigantic state, we see the causes of its fall. The prevailing corruption of manners destroyed all moral energy; and, from the time when Honorius ascended the throne, to the total overthrow of the empire, it was in a continual death-struggle. The system of dividing the empire, introduced by Dioeletian, in 284, and completed by Theodosius, was the chief cause of its political weakness and final dissolution, which its moral degradation made it impossible to avert, especially as the increase of civilization among the barbarians who had broken into the empire, gave them an overwhelming power. A new order of things commenced: the feudal system, introduced by the Ostrogoths, Franks, and Lombards, altered the whole character of a state which for centuries had boasted of a republican constitution; and even the Roman language gave way before the total change in the spirit of the times; and its place was supplied by the Italian, French, Spanish and English tongues. See *Byzantine Empire*.

WESTERN ISLANDS. See *Hebrides*, and *Azores*.

WESTERWALD; a chain of mountains in the Prussian government of Coblentz, and the duchy of Nassau, connected with the Siebengebirge. The highest point is near Neaburg and Salzkirch, 2600 feet above the level of the sea. Flax is cultivated and cattle raised on the Westerwald. It affords iron, copper, excellent building stone, and great quantities of brown coal.

WESTMEATH; an inland county of Ireland, in the province of Leinster, is bounded on the north by Cavan, on the east by Meath, on the south by King's County, and on the west by Roscommon and Longford, from the former of which it is separated by the Shannon. It is about twenty-five miles long from north to south, and twenty-four from east to west, and contains 562 English square miles, and 378,880 English acres. It is divided into twelve baronies, and sixty-two parishes, of which 21 have churches, all of them being in the diocese of Meath. The general aspect of this county is diversified with large lakes, woods, unproductive bogs, and rich grazing lands. The surface rises into small hills cultivated to the top, or covered with wood. The principal rivers are the Shannon, Inny, and the Brosna. The Shannon extends into a fine lake called Lough Ree, or the Royal Lake. The Inny, rising in Cavan, enters Lough Shelin on the borders of Westmeath, and after passing through Loughs Derveragh and Iron, falls into Lough Ree. The principal lakes are Lough Ree, full of wooded islands, Lough Shelin, Leign, Iron, Derveragh, Hoyle or Owell, and Ennel, some of which are encircled with well cultivated land, and others with low wooded hills. They are well stored with fish. The soil is generally light, though in some places deep and rich. Most of it lies on limestone, and yields very fine pasture, supporting a great many fine large horned cattle, and long woolled sheep. Tillage is carried on upon a limited scale, but still to such an extent as to supply the home consumption, and allow the farmers to contribute to the exportation of oats from Drogheda. Beside the usual crops, flax, hemp, and rape are raised; and clover and turnips to a small extent. The principal towns are Athlone, which is partly situated in Roscommon, Mullingar, the county town, Mool-grenogner, Kilbeggan, and a few other small places. Mullingar is a large and well built town, with extensive barracks, and carries on a considerable trade, and the rest are places of little note. Population in 1841, 141,300.

WESTMINSTER, a city of Middlesex, England, the seat of government, the residence of royalty, and the centre of fashion, is now so united

with London, that, in appearance, they form one city, and, in ordinary speech, are mentioned as one, though they have their separate jurisdictions. (See *London*.) Temple bar separates the two cities. Westminster lies in the west of London proper, with which it formerly communicated by means of the Strand, and forms the west end, or fashionable residence of the nobility and gentry. The existence of Westminster is derived from the foundation of the Abbey. In 1259, Henry III. granted to the abbot and convent of Westminster Abbey a market and fair, which was the origin of the city and liberties of Westminster. At the general suppression of religious houses by Henry VIII., it was converted into a bishopric, which, however, was transferred to Norwich in 1550. The city of Westminster is comprised in two parishes, St Margaret and St John, and the liberties consist of seven parishes. The population of the city and liberties, which return two members to Parliament, is, by the census of 1841, 222,053. Here are Westminster hall, abbey and school, St James's palace, Buckingham house, Carlton house, Whitehall palace, &c. Westminster hall, memorable as the scene of so many interesting transactions, was built by William II., in 1097, and entirely repaired, with many alterations, by Richard II., in 1397. The hall exceeds in dimensions any room in Europe unsupported by pillars, being 270 feet in length, ninety in height, and seventy-four in breadth. Parliaments have often sat in the hall, and the courts of chancery, exchequer, king's bench, and common pleas, have been held here, in different apartments, ever since the reign of Henry III. It has also been used for the trial of peers, and other distinguished persons, accused of high treason, or other crimes and misdemeanours, such as the late Lord Melville, Warren Hastings, &c. In this hall, likewise, are held the coronation feasts of the kings of England. The old palace, at the south end of the hall, including the chapel of St Stephen, before they were destroyed by fire, used to accommodate the two houses of parliament. Westminster abbey was built by Edward the Confessor, about 1050, on the site of an old Saxon church; but all that part which extends from the eastern extremity to the entrance of the nave was rebuilt in its present state by Henry III. (1220—1269). The nave was carried on slowly afterwards; and the towers were not completed till the time of Sir Christopher Wren, who finished them as they now are. The chapel, which bears the name of Henry VII., was built by that monarch in 1502, as a royal sepulchre. The general plan is that of a Latin cross, of which the nave is 234 feet long from west to east, and 90 feet wide. The transept is 225 feet long from north to south, and 100 feet wide. Beyond the transept, towards the east, are five chapels. In the poets' corner are the monuments of most of the distinguished poets of England; and in other parts of the abbey are those of distinguished statesmen, warriors, scholars, and artists. The kings of England are crowned in the choir of the abbey. Westminster school was founded by queen Elizabeth, in 1590, for the education of forty boys, denominated the *queen's scholars*, who are prepared for the university. It is situated within the walls of the abbey, and is separated into two schools or divisions, comprising seven forms or classes. Besides the scholars on the foundation, many of the nobility and gentry send their sons to Westminster for instruction, so that this establishment vies with Eton in celebrity and respectability. They have an upper and an under master, with numerous assistants. Of these masters many have been eminent in the walks of literature, particularly doctor Busby, so celebrated for his severity of discipline, and doctor Vincent, the author of the Voyage of Nearchus. See the *History of the Abbey Church of St Peter', Westminster, its Antiquities and Monuments* (2 vols. quarto, London, 1812); and Neale's *History and Antiquities of Westminster Abbey illustrated* (1818 and 1823, with 61 engravings).

WESTMORELAND; a northern county of England, is bounded on the east by Yorkshire and Durham, on the north and north-west by Durham and Cumberland, and on the south-west by Lancashire, a narrow stripe of which separates it from the sea. It is of a very irregular shape, its greatest length being about forty, and its greatest breadth thirty-five miles. It contains 763 square statute miles, and 488,320 English statute acres. The county is divided into two baronies, namely, that of Kendal, and that of Westmoreland, and into four wards, viz., those of Kendal, and Kirkby Lonsdale, in the barony of Kendal, and the east and west wards, in the barony of Westmoreland. The general aspect of Westmoreland, presents a great extent of bleak and barren fells and moors, and groups of lofty, naked, and picturesque mountains. Three-fourths of the county nearly consists of uncultivated land. The mountain valleys, which form the beds of the rivers, are moderately fertile, and yield good crops of oats, and in some instances of wheat and barley. Agricultural improvement has advanced rapidly in this county. The clover and turnip husbandry has made great progress, and through a large portion of the bottom of Westmoreland, and in the parishes of Heversham, Burton, and Kirkby Lonsdale, considerable quantities of wheat are annually raised. Many commons have been inclosed, and immense tracts drained. The cattle of this county are of the long-horned breed, and attain a large size. The mountainous districts support large flocks of sheep, which yield a coarse wool, but the breed has been lately much improved by crossing. Great numbers of geese are fed on the moors, and along with hams are exported in great quantities. The principal mountains in Westmoreland are Crossfell, the highest of the chain on its eastern boundary, and 3000 feet above the sea. Helvellyn is 3100 feet high, Bowfell and Rydalehead, each 3090, and the High Street is 2736 feet high. This last mountain derives its name from a broad green road along its summit, where the shepherds have annual horse races on the 10th of July. The principal rivers of the county are the Eden, the Lane, the Kent, the Eamont, the Winster, and the Lowther, none of which are navigable. They contain abundance of fish, and exhibit much picturesque scenery. The principal lakes are Windermere, Ulles-water, Grass-mere, Rydale-water, Elter-water, Hause-water, Red Tarn and Small-water, and Skeggles-water. The mineral productions of Westmoreland are lead, copper, coal, limestone, blue slate, marble, gypsum, and freestone. The best coal is found in the confines of the county in Stanemore forest. An inferior slaty coal is found in several places, but it is used only for burning lime. Marble has been wrought near Kendal on both sides of the Kent. The manufactures consist chiefly of silk and worsted waistcoat pieces, knit worsted stockings, flannels, cotton goods, gunpowder, and tanned leather. The exports are principally coarse woollen cloths, stockings, slates, tanned hides, gun-

powder, hoops, charcoal, hams, cattle, sheep, and wool. Population in 1841, 56,454.

WESTPHALIA; a name, 1. originally given to a large part of Germany; 2. to a duchy in Germany; 3. to one of the circles of the German empire; 4. to a kingdom; 5. to a province of Prussia —of which we shall treat in the above order.

1. The name of *Westphalia* was given in the middle ages, to all the country between the Weser, Rhine, and Ems, while the territory between the Elbe and Weser was called *Eastphalia*. The latter name was lost in the course of time: the former was retained, and was subsequently given to the circle of Westphalia, and to the Sauerland, or the duchy of Engern.

2. *Duchy of Westphalia.* In early times, this formed part of the great duchy of Saxony, and was then called *Sauerland*, a name which is still in use among the common people of that country, and includes also a part of the former county of Mark. In 1179, when Henry the Lion was put under the ban of the empire, the archbishop of Cologne received it from the empire as a fief, under the name of *Westphalia*, after which the name passed over to the country. Cologne remained in possession of it until the dissolution of the archbishopric, in 1802, upon which it was given, by way of indemnity, to Hesse-Darmstadt. In 1815, it was ceded by this power to Prussia, and was united with the Prussian province of Westphalia. It then contained 1530 square miles, with 134,715 inhabitants.

3. *Circle of Westphalia.* This comprised not only the land between the Weser, Rhine, and Ems, but also considerable districts on the left bank of the Rhine; but the proper duchy of Westphalia, as an appendage of Cologne, was considered as belonging to the electoral circle of the Rhine. It had also the official name of the *Westphalian Circle of the Lower Rhine.* It was one of the larger circles of the ancient empire.

4. *Kingdom of Westphalia.* The peace of Tilsit had made Napoleon master of all the Prussian territory west of the Elbe, and he also kept possession of the territories of the electors of Hesse and Hanover, and the duke of Brunswick. He had not then conceived the idea of extending the frontiers of the empire beyond the Rhine; and he created, out of the countries just mentioned, a kingdom of Westphalia, comprising all the country of Brunswick-Wolfenbüttel, the electorate of Hesse, (except Hanau and Katzenelnbogen), the Prussian provinces of Magdeburg and Altmark west of the Elbe, Halberstadt with Hohnstein, Hildesheim with Goslar, Mansfeld, Quedlinburg, Eichsfeld with Treffurt, Mühlhausen and Nordhausen, Stolberg-Wernigerode, Paderborn, Minden, and Ravensberg, the Hanoverian provinces, Göttingen, Grubenhagen with Hohnstein and Elbingerode, and Osnabrück, Corvey, and the county of Rittberg. The area amounted to 1530 square miles, with 1,946,343 inhabitants. November 15, 1807, the kingdom of Westphalia was created, and Jerome, the brother of Napoleon, then only twenty-four years old (see *Jerome*), was made king, with a constitution formed in close imitation of that of the French, which abolished feudalism, and might have done good in various respects, could it ever have gone into full operation free from the weight of foreign influence which continually pressed upon the kingdom.* Jerome appeared, Dec. 7, in Cassel, and entered on the government, but conducted, as might have been expected, not like a king, but rather like a French prefect. The situation of this new kingdom was deplorable. All the provinces had been systematically exhausted by the French, before they were united into a kingdom; in addition to which, the emperor had retained half of all the domains, or public property, in order to make grants therefrom to his soldiers; had stipulated that he should keep 12,500 men in Magdeburg, to be supported, clothed, and paid by the people of the country; and the kingdom was to pay all the contributions which had been imposed upon the several territories composing it when they were conquered. Westphalia was, in many respects, but a province, a territory of France, without enjoying the advantages which it might have derived from forming an integral part of the empire, and having the additional burthen of a large army and an expensive government. On the other hand, we must not omit to state the advantages which grew out of the intimate connexion of this new kingdom with France. The greatest were, as we have already said, the abolition of feudalism, and an increased estimation of the lower classes, a greater willingness to acknowledge their rights, e. g. in respect to the administration of justice, the distribution of the public burthens, their participation in the municipal administration, &c. The finances of the kingdom were in great embarrassment when it went into operation, and always remained so during the seven years of its existence, large sums going every year to France without any equivalent, and the kingdom being obliged to take part in all the great movements of the empire. The young inexperienced monarch had, indeed, counsellors around him, who did the best that could be done under the deplorable circumstances of the kingdom. Within a short time, an army of 16.000 men was formed. The French code, though at first much disliked, gradually began to find less opposition from the people; the taxes, though high, were more

* The emperor Napoleon gave this constitution to the country, as its preamble declares. It stipulates of what the kingdom of Westphalia is to consist; that half of all the domains of the former princes shall be at the emperor's disposal, to be given to his officers of the army; that Westphalia is to form part of the confederacy of the Rhine, with a contingent of 25,000 men, of whom, however, in the "first years," only half are to be raised; the other half to be furnished by France, and to form the garrison of Magdeburg; that Jerome Napoleon is to be king, his direct male descendants to succeed him; the king to remain always subject to the imperial family statutes; in case of minority, Napoleon, or his descendants, to appoint a regent; the king and his family to have a revenue of 5,000.000 francs, to be raised from the other half of the domains, with additions from the public treasury, if they should fail to yield the requisite amount. It further provides that there shall be a constitution securing the equality of all the subjects and freedom of worship; that the feudal privileges, and those of corporations, shall be abolished, but the different ranks of nobility are to continue; one system of taxes to embrace all classes; the tax on real estate not to exceed a fifth of the revenue; four ministers to be appointed, and a council of state; laws respecting the finances, civil and penal legislation, to be drawn up in the council of state, to be discussed by committees of the chamber, their reports to be discussed by the council of state, and the law, as finally settled by the council of state, under the presidency of the king, to be laid before the chamber; the estates to consist of one hundred members (seventy to be chosen of owners of real estate, fifteen of merchants and manufacturers, and fifteen of literary men); a third part to be renewed every three years; their president to be nominated by the king; their debates to be secret; the country to be divided into departments, &c., with prefects, &c, and departmental colleges, &c., as in France; the *Code Napoleon* to be adopted January 1, 1808; the administration of justice to be public, in penal cases with the aid of juries; a new system of penal jurisprudence to be adopted July, 1, 1808; courts of the peace to be established, with justices of the peace; the judges to be independent, appointed by the king; the judges to be removable only by the king, and only after sentence by the court of appeal, on charges presented by the royal procurator, or one of its presidents; no enlisting of soldiers for money to take place; the army to be supplied by conscription. Dec. 23, 1808, a supplementary statute was issued, establishing one more minister.

uniformly distributed than ever before; and the new constitution afforded advantages to the great body of the people, which they soon began to estimate. The government gained in firmness as the prejudices against it diminished. The king, besides his civil list, had 1,000,000 francs as a French prince. He was much inclined to dissipation, but, at the same time, disposed to do good to his people. In 1809, internal commotions began, occasioned by the war between Austria and France. The eastern frontier of the kingdom was attacked by a corps under Schill. In the south, an insurrection broke out among the peasants near Marburg. These circumstances gave rise to severe measures, and the extension of the high police. The king was obliged, by France, to increase his army to 30,000 men; and the taxes were, in consequence, so much augmented that, neither the minister of finances nor the estates of the kingdom knowing any other means to provide for the exigency, the public domains were sold, and the public debt was arbitrarily reduced, by expunging a certain portion of each man's demand. In 1810, the whole of the former Hanoverian territory was united to Westphalia; but hardly had she taken possession of it, when another imperial decree was issued, annexing not only this newly-acquired territory, but also the former provinces of Osnabrück, Minden and part of Ravensberg, to the French empire. It was of no avail that the king strove to prevent this measure by personal representations in Paris; he was obliged to submit, and, moreover, to adopt the continental system (q. v.): but this was not so oppressive in Westphalia as in some other countries, the government mitigating its rigour as much as possible. In 1812, the king led his army to Poland; but the emperor soon obliged him to leave his troops and return. Of his 24,000 men, but few escaped the disasters which befel the French forces beyond the Niemen. A new army, of 12,000 men, was immediately organized, and accompanied the imperial army to Saxony; but the hearts of the soldiers were with their brethren who stood opposed to them. Even before the battle of Leipsic (q. v.), Czernitscheff drove the king from his residence, and occupied Cassel for three days. The king returned with some French troops, but only to receive the news of the great battle of Leipsic, and to leave his residence and kingdom for ever, after having caused every thing valuable in his palaces, and even a part of the treasures of the museum, to be carried off. Two days after his departure, the Russians entered Cassel; and, in a few days, the old governments were re-established almost throughout the kingdom. Oct. 20, 1813, the kingdom of Westphalia ceased to exist.

5. The *Prussian Province of Westphalia* was created, in 1815, out of the provinces which Prussia formerly possessed in the Westphalian circle, with the exception of the duchies of Cleves and Berg, and the abbeys of Essen and Werden. It is bounded by the Netherlands, Hanover, Brunswick, the two Lippes, electoral Hessia, Waldeck, Hesse-Darmstadt, Nassau, the Lower Rhine, and Juliers-Cleve-Berg. The southern and eastern parts are mountainous, yet have some fertile plains; the northern and north-western parts contain considerable heaths. The climate is generally moderate, but rough in the mountainous parts of the Sauerland. The Weser, Ems, Lippe, and Ruhr, are the most important navigable rivers. The products are cattle, grain, flax, wood, much iron, copper, calamine, lead, coals salt, minerals waters, &c. The agricultural products are not sufficient to supply the inhabitants. The manufacture of linen, and all kinds of iron and steel wares, is extensive. Many of the inhabitants of the northern parts go annually to the Netherlands, to assist in gathering the harvest, and to dig turf. The whole province contains 7780 square miles, and, with the military, 1,096,000 inhabitants, partly Catholics, partly Protestants, chiefly Lutherans. It is divided into three governments, Münster, Minden, and Arnsberg, with capitals of the same names. In Hamm, a periodical called *Archives of History and Antiquities* is published by a society for promoting the knowledge of the history and antiquities of Westphalia.

WESTPHALIA, PEACE OF; the name given to the peace concluded in 1648, at Münster and Osnabrück (both situated in Westphalia), by which an end was put to the thirty years' war (q. v.), and a new political system was established in Europe, which continued till the breaking out of the French revolution. For Germany, particularly, it became the foundation of the whole political system—a system unwieldy and oppressive. This peace was not concluded until after seven years of negotiation and preparation. Towards the end of 1641, preliminaries were agreed upon at Hamburg, having reference chiefly to the mode of proceeding in regard to the future peace, and the place where the deliberations should be carried on. The actual negotiations did not commence until 1644, at Osnabrück, between the ambassadors of Austria, the German empire and Sweden; at Münster, between those of the emperor, France and other powers; but the articles adopted in both formed one treaty. This division of the members of the diplomatic congress was intended partly to prevent disputes on points of etiquette between France and Sweden, partly because Sweden refused to have any thing to do with the papal nuncio, who was sent to assist in negotiations. Quarrels on points of etiquette, carried to the most ridiculous extreme, prevented the opening of the congress for a long time. The ministers of princes claimed the title of *excellency*, like those of the electors. A round table was adopted for the sessions, in order to evade other punctilios. Peace was concluded at Münster, whither the ministers, who had been at Osnabrück, repaired, after they had also concluded a treaty shortly before, on October 24, 1648. By this peace, the religious and political state of Germany was settled: the sovereignty of the members of the empire was acknowledged. They received the right of concluding treaties among themselves and with foreign powers, only not against the emperor and empire. Their consent was made necessary to enable the emperor to put any of the members under the ban. The electoral family of the Palatinate received back the Palatinate (q. v.) of the Rhine, and the eighth electorship was created for it, with a provision, however, that this should be abolished in case the Bavarian house should become extinct (as actually happened in 1777), since the Palatine house would then recover the Bavarian electorate. The changes which had been made for the advantage of the Protestants since the religious peace, in 1555, were confirmed by the determination that every thing should remain as it had been at the beginning of the (so called) *normal year*, 1624. The Calvinists received equal rights with the adherents of the Augsburg Confession, or the Lutherans. The princes of the empire were bound not to pro-

secute or oppress those of their subjects whose religious faith differed from their own. After all impediments in the way of the system of toleration had been overcome, the ambassadors embraced and shed tears of joy. Several religious foundations were secularized, and given as indemnifications to several members of the empire, in which the emperor acquiesced to secure the integrity of his hereditary states. The empire ceded Alsatia to France, to its lasting injury; Sweden received Hither Pomerania, Bremen, Verdun, Wismar, and 5,000,000 of German dollars for her troops. Brandenburg received the secularized bishoprics of Halberstadt, Minden, Camin, and the version of Magdeburg. Mecklenburg received the secularized bishoprics of Schwerin and Ratzeburg; Hanover, alternately with a Catholic bishop, the bishopric of Osnabrück and some convents; Hesse-Cassel, the abbey of Hirschfeld and 600,000 German dollars. The United Netherlands were acknowledged as an independent nation, and the Swiss as entirely separate from the German empire. France and Sweden undertook to guarantee this peace. The solemn protest of pope Innocent X. against these terms, particularly in respect to the injury done to the papal see by the secularization of bishoprics and abbeys, &c.. was not regarded; but the complete execution of the conditions of the treaty was obstructed by many difficulties. The war was even continued between France with Savoy on the one side, and Spain with Lorraine on the other; also between Spain and Portugal.—See Von Woltmann's *History of the Peace of Westphalia* (2 vols., Leipsic, 1808).

This peace gave the death-blow to the political unity of Germany. It made the German empire, which was always a most disadvantageous form of government for the people, a disjointed frame, without organization or system. Ferdinand II., had it not been for his intolerance, might have had it in his power, after the peace of Lübeck with Denmark, in 1629, to give once more consistency to the empire; whether, on the whole, to the advantage of the people, or not, we do not say. But by the "edict of restitution" effected by the Jesuits, he deprived himself of the fruits of Tilly's and Wallenstein's victories. Every German prince and petty monarch now thought only of his own house; and the German empire not only lost, by the peace of Westphalia, a territory of 40,000 square miles, with 4,500,000 inhabitants, but also its western military frontier; while Lorraine, on the side of Alsatia, and the Burgundian circle in the west and north, were left without defence. The internal trade of Germany was also grievously obstructed by the establishment of above 300 sovereigns. On the other hand, the right procured by France for every member of the empire to conclude separate alliances, which gave to Bavaria, Brandenburg, and other German houses, importance in the general European politics, together with the influence of foreign powers, as Sweden, on the politics of Germany, made this country thenceforth the theatre of all the quarrels of Europe. One military state after another was established; and the German nation, impeded, in a thousand ways, in its manufactures and commerce, laboured only to support a number of petty, yet overgrown armies, ridiculous courts and foreign embassies. The aristocratic principle was developed at the expense of the monarchical, so that the empire, which always had the disadvantages both of an electoral and a hereditary monarchy, without the advantages of either, now became entirely crippled. France and Sweden acquired great influence in Germany by this peace, owing to the contemptible pride of the petty princes of the country, and their insensibility for the general well-being of the nation. Though well aware that such speculations are useless, the historian can hardly help asking himself, How different would have been the destiny of Europe but for the ball which put an end to the precious life of Gustavus Adolphus, on the field of Lützen?

WETSTEIN; the name of a family long resident at Basle, several of the members of which were highly distinguished as scholars and theologians.

*John James Wetstein*, born in 1693, is said to have graduated at Basle as a doctor in philosophy before he had reached the age of seventeen. Having entered the church, he devoted himself, with uncommon ardour and perseverance, to the restoration of the purity of the text of the New Testament, and, in pursuance of this object, visited most of the principal libraries of France, Switzerland, Germany and England, examining and collating their various manuscripts. On his return to Basle, he declared his intention of publishing a new treatise on this important subject, under the title of *Prolegomena ad Novi Testamenti Græci Editionem accuratissimam e vetustissimis Codicibus Manuscriptis denuo procurandam.* This annunciation excited considerable uneasiness among the German divines, who exerted themselves with such effect to procure the suppression of a work which, they feared, might unsettle the received version, that the council refused to sanction or permit the publication. Wetstein, in consequence, removed to Holland, where he published his book in 1730, and was soon after appointed by the Remonstrants to the professorship of history and philosophy, then become vacant by the resignation of Le Clerc. In 1751—1752 appeared his last work, an edition of the New Testament, in two folio volumes, with the text as generally received, and the various readings, notes, &c., below. To this he also annexed two curious epistles of Clemens Romanus, from a Syriac manuscript, with a Latin version. He died at Amsterdam, March 24, 1754.

WETTER, a lake of Sweden, in East Gothland, sixty-five miles long, and from ten to sixteen wide, is deep and clear. It is supposed to prognosticate the approach of stormy weather. Like all inland pieces of water surrounded with mountains, it is subject to sudden storms in still weather; and superstition has reported that these storms are occasioned by a subterranean communication with lake Constance, in Switzerland.

WETTIN, Counts of; a distinguished family in the middle ages, from which all the present reigning houses of Saxony derive their origin. The name is taken from a Sclavonic place, in the duchy of Magdeburg. The first of this family, known with certainty, is Dicterich, count of Wettin, who died in 982. His descendant, Frederic the Warlike, was infeoffed by the emperor Sigismund, in 1423, with Saxony, and the dignity of elector was connected with his fief. See *Saxony*.

WEXFORD; a maritime county in the south-east of Ireland, is bounded on the east and south by the sea, on the west by Waterford, Kilkenny, and Carlow, and on the north by Wicklow. It is about fifty-six miles long from north to south, and thirty-two from east to west, and contains 934 English square miles, and 597,760 English acres

The county is divided into eight baronies, and 142 parishes, all of which but two are in the diocese of Ferns. The two islands called Salters belong to the county. This county is mountainous in its north, north-west and west confines. It contains much coarse land, and stiff clay soil, which, from the want of limestone, it is difficult to improve. The best part of the county is the haronies of Bargie and Forth on the east, where the land is less elevated, and where the soil is sufficiently light to produce excellent crops of barley. Beans are successfully cultivated, and also clover and turnips. Potatoes are planted in drills, and lime and marl, though expensive, are much used as manure. Whole fields are kept under furze as in Cork and Waterford for fuel. Although there are no rich grazing farms, yet there are numerous dairies, which are ill-managed. The cows and the sheep are of an inferior kind. The rivers are the Slaney and the Barrow. The former crosses the county from Newton-Barry to Wexford, and receiving the Barrow from the north, exibits on its fine wooded banks much beautiful and picturesque scenery. It is navigable to Enniscorthy near the middle of the county. By means of the Barrow, which divides the county from Kilkenny on the west, large vessels can reach the town of New Ross, situated near the junction of the Barrow and Nore. The principal towns are Wexford, the county town, described in a separate article, Enniscorthy on the Slaney, New Ross, and Gorey, and the pleasant village of Newton-Barry. Enniscorthy was once celebrated for its iron works, of which some still exist. The cotton manufacture is now carried on here, and a great deal of coarse woollen cloth is made. There is a fine old castle here in tolerable repair. The town was nearly destroyed during the rebellion in 1798. New Ross, on the Barrow, is well fitted for becoming a place of commercial importance. The buildings are said to be numerous and elegant, and the population rapidly increasing. Vessels of large size can unload at the quay, and it is one of the principal ports for the exportation of wool. Population of the county in 1831, 182,991; in 1841, 202,033.

WEXFORD; a seaport town of Ireland, situated at the mouth of the river Slaney. The town is irregularly built, and the streets narrow, but it contains some handsome buildings. The church, situated in the principal street, is an elegant modern structure. The market and court-house are built with much taste, and the barracks erected on the site of the old castle, command an extensive view. The great ornament of the town is the wooden bridge thrown across an arm of the sea 2100 feet wide, where it was found impracticable to erect a bridge of stone. This bridge is the favourite promenade. Wexford was once a place of great strength, and some remains of its ancient thick walls still exist. The harhour is formed by two tongues of land between which there is an entrance half a mile wide, which was formerly defended by Fort Margaret and Fort Rosslane, built at the end of each isthmus. The harhour, though spacious, is shallow. A good deal of woollen cloth is manufactured in the town and neighhourhood, and the chief trade consists in the exportation of harley, malt, beer, beef, hides, butter and tallow.

WEYDE, Roger van der. See *Roger*.

WEYMOUTH; a sea-port, borough, and market-town of England, in Dorsetshire, at the mouth of the Wey, celebrated as a fashionable hathing-place. It is situated on the British channel, at the western side of a most beautiful bay, well protected from the north winds by hills. It is 128 miles from London, and 65 from Bath. It communicates with Melcombe Regis, to which it is united by a handsome new bridge. Weymouth became a place of fashionable resort in consequence of its being frequented by George III., and is now greatly enlarged by the addition of many new and elegant buildings. The fashionable promenade is on the esplanade, which is a beautiful raised terrace, of considerable length and breadth, kept in the most perfect repair, with a slope gradually descending to the sands. The united borough of Weymouth and Melcombe Regis sent four members to parliament previous to the reform act of 1832, which deprived it of two of its members. Population of Weymouth in 1841, 2669; of Melcombe Regis, 5039; total 7708.

WEZLAR, formerly a free imperial city, in the circle of the Upper Rhine, since 1814, belonging to the Prussian province of the Lower Rhine, in the government of Coblentz, has a romantic situation on the Lahn. It contains 750 houses and 4200 inhabitants. The principal building is the cathedral. Wezlar is famous for having been, as long as the empire existed, the seat of the court of the empire, called the *imperial chamber*. The papers belonging to 80,000 legal processes are preserved in a particular building in this place. The imperial chamber was fixed in Wezlar in 1693. In 1806, it was, of course, dissolved. In 1803, the city and territory were given to the then chancellor of the empire, subsequently the grand duke of Frankfort

WHALE (*balæna*). These animals so much resemble fish in their external form, that they are almost universally considered as such by the great mass of mankind. If, however, we examine their structure more carefully, we shall find that they differ from quadrupeds only in their organs of motion. They are warm-blooded, breathe atmospheric air only, and by means of lungs, and bring forth and suckle their young in the same manner as quadrupeds: in short, all the details of their organization are the same as in this class of animals. The body and tail are continuous, the latter tapering gradually, and terminating in a large, horizontal, cartilaginous fin: the hind feet are altogether wanting, but their position is marked by two small, rudimentary bones, enveloped in the skin: the fore feet have externally the form of fins or flippers; but they possess the same bones as those of quadrupeds, flattened, however, shortened, and enveloped in a tendinous membrane: the head is of enormous size, often occupying one third of the total length of the animal; and the opening of the mouth corresponds in magnitude: the neck is excessively short, and externally appears to be altogether wanting: the nostrils are the blow-holes or spiracles, situated at the top of the head, by means of which atmospheric air penetrates to the lungs when the animal rises to the surface of the water: the skin is entirely destitute of hairs; and beneath it a thick coating of oily fat, commonly called *blubber*, envelopes the animal: the eyes are exceedingly small, compared with the bulk of the animal, and the external ear is altogether wanting: their senses, in consequence, would not seem to be very acute; neither do they display much intelligence: the sea affords them abundance of food, which they are enabled to procure with little difficulty; and they find in their size and strength a sufficient protection against most dangers.

The common or Greenland whale (*B. mysticetus*) is destitute of teeth, but, in their place, the upper

jaw is furnished with transverse layers of a horny substance, called *baleen* or *whalebone*, which, at the edges, split into long, slender fringes. This species is productive of more oil than any other; and, being less active, slower in its motion, and more timid than the rest of its kind of similar magnitude, is more easily captured. When fully grown, its length is from fifty to sixty-five feet, rarely, if ever, reaching seventy, and its greatest circumference from thirty to forty: the ordinary weight is about seventy tons. When the mouth is open, it presents a cavity large enough to contain a boat full of men, being six or eight feet wide, ten or twelve high in front, and fifteen or sixteen long. These animals have no voice, but in breathing or blowing, make a very loud noise: the vapour they discharge is ejected to the height of some yards, and appears, at a distance, like a puff of smoke. The usual rate at which they swim seldom exceeds four miles an hour; and though their extreme velocity may be at the rate of eight or nine, this speed never continues longer than for a few minutes before it relaxes to almost one half. They are also capable of ascending with such rapidity as to leap entirely out of the water, which feat they sometimes perform apparently as an amusement, to the no small terror of inexperienced fishers. Sometimes they throw themselves into a perpendicular posture, with their heads downwards, and, rearing their tails on high, beat the water with tremendous violence: the sea is then thrown into foam, and the air filled with vapours: the noise, in calm weather, is heard to a great distance, and the concentric waves, produced by the concussions on the water, are communicated abroad to a considerable extent. Sometimes the whale shakes its mighty tail in the air, which, cracking like a whip, resounds to the distance of two or three miles. Whales usually remain at the surface to breathe about two minutes, seldom longer, during which time they "blow" eight or nine times, and then descend for an interval of five or ten minutes, but sometimes, when feeding, fifteen or twenty. When struck, they have been known to descend to the perpendicular depth of a mile, and with such velocity, that instances have occurred in which they have broken their jawbones by the blow struck against the bottom. Their food consists of mollusca, shrimps, and other small crustaceous animals. When feeding, they swim with considerable velocity, below the surface, with the jaws widely extended; a stream of water consequently enters the capacious mouth, bearing along large quantities of marine insects. The water escapes again at the sides, but the food is entangled and strained by the whalebone, which, from its compact arrangement, does not allow a particle of the size of the smallest grain to escape. Whales, though often found in great numbers together, can scarcely be said to be gregarious, occurring, most generally, solitary, or in pairs, excepting when drawn to the same spot by the attraction of an abundance of palatable food, or a choice situation of the ice. They occur most abundantly in the frozen seas of Greenland, and Davis's straits, in Baffin's and Hudson's bays, in the sea to the northward of Beering's straits, and along some parts of the northern shores of Asia, and probably of America. They are never met with in the German ocean, and rarely within two hundred leagues of the British coast; but along the coasts of Africa and South America, they are found, periodically, in considerable numbers, and are captured by the southern British and American whalers. It is not, however, certainly ascertained, whether this species is identical with the northern, though it evidently approaches it very closely.

The affections of the whale towards its own kind appear to be strong. The fishers are in the habit of taking advantage of the love of the old whale for its offspring, to entice it into their snares; and the artifice often succeeds when probably, no other would. The cub, though of little value in itself, is struck, to induce the mother to come to its assistance. "In this case," says Captain Scoresby, "she joins it at the surface of the water, whenever it has occasion to rise for respiration; encourages it to swim off; assists its flight, by taking it under her fin; and seldom deserts it while life remains. She is then dangerous to approach; but affords frequent opportunities for attack. She loses all regard for her own safety, in anxiety for the preservation of her young;—dashes through the midst of her enemies;—despises the danger that threatens her;—and even voluntarily remains with her offspring, after various attacks on herself from the harpoons of the fishers. In June 1811, one of my harpooners struck a sucker, with the hope of its leading to the capture of the mother. Presently she arose close by the 'fast-boat;' and seizing the young one, dragged about a hundred fathoms of line out of the boat with remarkable force and velocity. Again she arose to the surface; darted furiously to and fro; frequently stopped short, or suddenly changed her direction, and gave every possible intimation of extreme agony. For a length of time she continued thus to act, though closely pursued by the boats; and, inspired with courage and resolution by her concern for her offspring, seemed regardless of the danger which surrounded her. At length, one of the boats approached so near, that a harpoon was hove at her. It hit, but did not attach itself. A second harpoon was struck; this also failed to penetrate: but a third was more effectual, and held. Still she did not attempt to escape, but allowed other boats to approach; so that, in a few minutes, three more harpoons were fastened; and in the course of an hour afterwards, she was killed."

The instruments of general use, in the capture of the whale, are the harpoon and lance. The harpoon is an instrument of iron, about three feet in length, terminating in an arrow-shaped head, the two branches of which have internally a smaller reversed barb, resembling the beard of a fish-hook. When this instrument is forced, by a blow, into the fat of a whale, and the line is held tight, the principal barbs seize the strong ligamentous fibres of the blubber, and prevent it from being withdrawn. The lance is a spear of iron, six feet in length, terminating in a head of steel, made very thin and exceedingly sharp, seven or eight inches in length and two or two and a half in breadth. These two instruments, together with lines, boats and oars, form all the necessary apparatus for capturing the whale. Considerable address is requisite to approach sufficiently near to the animal during its short stay at the surface; but when this has been accomplished, the hardy fisher rows directly upon it, and, an instant before the boat touches, buries the harpoon in its back. But if, while the boat is at a little distance, the whale should indicate his intention of diving, the harpoon is thrown from the hand; and when this is done skilfully, it is efficient at the distance of eight or ten yards. The wounded whale

makes a convulsive effort to escape. Then is the moment of danger; and both boat and men are exposed to destruction from the violent blows of its ponderous tail. The animal immediately sinks under water: after this it usually pursues its course directly downwards towards the bottom of the sea. The utmost care and attention are requisite, on the part of every person in the boat, while the lines are running out; fatal consequences having been sometimes produced by the most trifling neglect. When the line happens to run foul, and cannot be cleared on the instant, it sometimes draws the boat under water. The average stay under water of a wounded whale, which steadily deseends after being struck, is about thirty minutes. The greater the velocity, the more considerable the distanee to whieh it descends, and the longer the time it remains under water, so much greater in proportion is its exhaustion and the facility of accomplishing its eapture. Whenever it re-appears, the assisting boats make for the place with their utmost speed; and, as they reach it, each harpooner plunges his harpoon into its back, to the number of three, four, or more, according to the size of the whale and the nature of the situation. Most frequently, however, the whale descends, for a few minutes, after receiving the second harpoon, and obliges the other boats to await its return to the surface, before any further attack can be made. It is afterwards actively plied with lances, which are thrust into its body, aiming at the vitals. At length, exhausted by numerous wounds and the loss of blood, the huge animal indicates the approach of death by discharging from the blow-holes a mixture of blood along with the air and mucus which it usually expires, and, finally, jets of blood alone. The sea, to a great extent round, is dyed with its blood; and the ice, boats and men are sometimes drenched with it. Its final capture is sometimes preceded by a convulsive struggle, in which the tail, reared, whirled, and violently jerked in the air, resounds to the distanee of miles. In dying, it turns upon its back or its side. Thus ends this remarkable contest between human ingenuity and brute force, in which man seems to be chiefly indebted for suecess to his own apparent insignificance, to the animal exhausting itself by its own efforts, and to the necessity it is under of coming to the surface to breathe. The remarkable exhaustion observed in a wounded whale, on its reappearance at the surface, is the effect of the almost incredible pressure to which the animal must have been exposed at the depth of seven or eight hundred fathoms—a pressure on the surface of its body exceeding 200,000 tons, and which is sufficient to force the water through the pores of the hardest wood.

For a full account of the whale, as well as of the various modes of fishing in pack, field, or bay ice, &c., and of the subsequent operations upon the dead body, we must refer to the work of Scoresby, where the reader will find the most certain information on this subject, so far, at least, as the business is carried on in the Polar seas.

The various uses to which the different parts of the whale are applied, are too numerous for insertion here: suffice it to say, the whale fishery forms an important branch of commerce, and, indeed, seems almost indispensable to the existencc of some northern tribes.

The razor-back (*B. physalus*) is probably the most powerful and bulky of its tribe, and consequently of the whole animal creation. It is readily distinguished from the preceding by the presence of a dorsal fin; its form is less cylindrical, the body proportionably longer, the whalebone shorter, its breathing or blowing more violent, and its speed greater. The length is about one hundred feet, and its greatest circumference thirty or thirty-five. Its blowing in calm weather may be heard at the distance of a mile. Its greatest speed is about twelve miles an hour. It is by no means a timid animal; and when closely pursued does not attempt to outstrip the boat, but merely endeavours to avoid it by diving or changing its direction. If harpooned or otherways wounded, it then exerts all its energies, and escapes with its utmost velocity, but shows little disposition to retalinte on its enemies. It seldom lies quietly on the surface of the water while blowing, but usually has a velocity of four or five miles an hour, and, when it descends, very rarely throws its tail into the air, which is a very general practice with the common whale. Its great speed and activity render it a difficult and dangerous object of attaek, while the small quantity of inferior oil it affords makes it unworthy the general attention of the fishers. When struck it frequently drags the fast-boat with such speed through the water, that it is liable to be carried immediately beyond the reach of assistance, and soon out of sight of both boats and ship. It has been known to dive obliquely with such velocity that 480 fathoms, or more than half a mile, of line were withdrawn from the boat in about a minute of time. The head is small, compared with that of the common whale; the fins long and narrow; the tail about twelve feet broad; the whalebone about four feet in length, thick, bristly, and narrow; the blubber six or eight inches thick, of indifferent quality; the colour bluish-black on the back, and bluish-gray on the belly; the skin smooth, excepting on the sides of the thorax, where are some remarkable longitudinal folds. The *physalus* occurs, in great numbers in the Aretic seas, especially along the edge of the ice between Cherie island and Nova Zembla, and also near Jan Mayen. It is seldom seen among much ice, and seems to be avoided by the common whale; and, consequently, the whale fishers view its appearanee with concern.

The cachalot or spermaceti whale (*physeter macrocephalus*) differs from the above-mentioned animals in many important particulars. The mouth is entirely destitute of whalebone, and the lower jaw is armed, on each side, with a row of about twenty thick, conical teeth, which fit into corresponding depressions in the upper jaw. The blow-hole is single, not symmetrical, but directed towards the left side, and placed at the extremity of the upper part of the snout. The left eye is also smaller than the other. The head is of enormous size, terminated abruptly in front; but the lower jaw is very long and narrow. The upper part of the head is composed of large cavities, separated by cartilaginous partitions, filled with an oil which condenses and crystallizes on cooling, forming the well-known substance called *spermaceti*. This is the principal object of the fishery; for their body does not yield a great proportion of blubber. The spermaceti whale is found in all seas, but most abundantly in the Pacific. It is gregarious; and herds are frequently seen containing two hundred or more individuals. Such herds, with the exception of two or three old males, are composed of females, who appear to be under the direction of the males, The males are distinguished by the whalers, as "bulls."

and the females they call "cows." The bulls attack with great violence, and inflict dreadful injuries upon other males of the species which attempt to join the herd. Whenever a number of them are seen, four boats, each provided with two or three lines, two harpoons, four lances, and a crew of six men, proceed in pursuit, and if possible, each boat fastens to a distinct animal, and each crew kill their own. When one is struck out of a herd, it commonly takes the lead, and is followed by the rest. It seldom descends far under water, but generally swims off with great rapidity, stopping after a short course, so that the boat can be drawn up to it by the line, or be rowed sufficiently near to lance it. In the agonies of death, the struggles of the animal are tremendous: the surface of the ocean is lashed into foam by the motions of its tail; and the boats are kept aloof, lest they should be dashed to pieces. When a herd is attacked in this way, ten or twelve of the number are often killed: those which have been only wounded are rarely captured. The separation of the blubber or "flensing," is sometimes done differently from the manner used in polar whaling. A strap of blubber is cut in a spiral direction, and, being raised by tackles, turns the animal round, as on an axis, until nearly all the blubber is stripped off.

WHALE FISHERY. The Biscayans were the first people who prosecuted the whale fishery as a regular commercial pursuit. They carried it on with great vigour in the twelfth, thirteenth, and fourteenth centuries. The whales taken by them, were not, however, so large as those taken in the polar seas, and were not very productive of oil; but their flesh was used for food, and the whalebone, which sold at a very high price, was applied to various useful purposes. The failure of whales in the Bay of Biscay put an end to this fishery. The voyages of the English and Dutch to the Northern ocean, in search of a passage to India, laid open the haunts of the whale; and vessels were fitted out by those nations, the harpooners and part of the crew being Biscayans. The numbers of whales were here so great, and the capture so easy, that many were killed and abandoned merely from the ships being full. It was the practice of these times to boil the blubber on shore in the north, and to fetch home only the oil and whalebone; and the Dutch constructed a considerable village on the northern shore of Spitzbergen, which they called *Smeerenberg* (from *smeeren*, to melt, and *berg*), and which, during the busy season, abounded with shops, inns, &c. The Dutch acquired a decided superiority over their competitors in the fishery; and such was the quantity of oil procured, that ships were sent out in ballast to assist in bringing home the produce. Whales soon became scarce about Spitzbergen, taking to the deep ocean, and to the Greenland seas; and it became usual to send the blubber direct to Holland. The fishery had at first (1614) been granted to an exclusive company, but was thrown open in 1642: from which time it was carried on to the greatest extent, and to the most advantage. The private ships sent out by the Dutch were fitted out on a principle that secured economy and vigilance on all sides. The hull of the vessel was furnished by an individual, who commonly took upon himself the command; a sail-maker supplied the sails, a cooper the casks, &c. The parties engaged as adventurers; each person shared in the produce according to his proportion of the outfit, and the crew was hired on the same principle. In its most flourishing state (about 1680), the Dutch whale fishery employed about 260 ships and 14,000 sailors. The wars of the end of the eighteenth and beginning of the nineteenth centuries annihilated this branch of Dutch industry, and, in 1828, only one ship sailed from Holland.

The English whale fishery was at first carried on by enclusive companies, but with little success. In 1732, a bounty of twenty shillings a ton to every ship of more than two hundred tons' burthen engaged in the fishery, was granted by parliament, which, in 1749, was raised to forty shillings, and continued, with some variations, (being finally reduced, in 1795, to twenty shillings), till 1824, when it ceased. The total amount of bounties paid from 1750, to 1824, has been estimated at about £2,500,000; but the success of British whalers, even with this advantage is to be attributed principally to the decline of the Dutch fishery. In 1815, there were 134 British ships, with 5800 seamen, engaged in the northern whale fishery, and about thirty ships, with 800 men, in the southern. In 1821, when the number was greatest, there were 142 ships, of 44,864 tons, and with 6074 men engaged in the northern fishery; in 1824, 120 ships, of 35,194 tons, and 4867 men: immediately after the repeal of the bounty, the number fell off at once, and, in 1829, it amounted only to eighty-nine, of 28,812 tons. The season of 1830, was one of the most disastrous ever known since the commencement of the fishery. Of the ninety-one vessels which sailed, nineteen were entirely lost; as many more returned clean, or without a single fish; seventeen brought only one fish each; and of the others, many had only two or three. The actual loss incurred from the shipwrecks, and the severe injuries sustained by twelve other vessels, is calculated to have amounted to about £143,000. Both oil and whalebone immediately rose to more than double their former price; but still the whole produce of the fishery of this year did not amount, according to the highest estimate, to more than £155,565; while that of 1829 was reckoned at £376,150. The season of 1831 was also unfortunate, though not to the same extent; three of the vessels having suffered shipwreck. The produce as compared with that of the preceding year was, in oil 4800 tons in place of 2205, and of bone 230 tons in place of 119. But in 1829 there had been obtained 10,672 tons of oil, and 607 tons of bone; and in 1828, of oil 13,966 tons, and of bone 802 tons. The value of the whole produce of the fishery of 1831, when oil had fallen from £50 to £30, and whalebone from £380 to £200, was estimated only at £190,000. The season of 1832 was considered prosperous.

The locality of the northern fishery has entirely changed since the first expeditions. The seas between Spitzbergen and Greenland have been entirely abandoned by the whalers, who now resort to Baffin's bay and Davis's strait, or the coast of West Greenland. The Dutch first began to frequent Davis's straits in 1719; but it was quite recently that the British first followed their example. Even so late as 1820, the fishery in the Greenland seas was the most considerable; but within a few years it has been almost entirely deserted. Of ninety-one ships, fitted out in 1830, only four were for Greenland. The discoveries made in the northern waters, by the British exploring voyages (see *North Polar Expeditions*), have made the fishers acquainted with several new and advantageous

situations for the prosecution of their business. The sea in Davis's straits is less incommoded with field ice than the Greenland and Spitzbergen seas; but it abounds with icebergs, and the fishery is more dangerous.

France has, of late years, had little share in the whale fishery. In 1784, Louis XVI. fitted out six ships, on his own account, which were furnished with harpooners, and a number of seamen from Nantucket. In 1790, there were about forty French ships employed in the fishery, which was destroyed by the wars of the French revolution. Since the peace, the government has attempted to revive it, but with little success.

The whale fishery has been carried on with greater vigour and success from the United States of America, than from any other country. It was begun by the colonists on their own shores at a very early period; but, the whale having abandoned them, the American navigators entered with extraordinary ardour into the fisheries in the Northern and Southern oceans, from about the middle of the eighteenth century. From 1771 to 1775, Massachusetts employed annually 183 vessels, of 13,820 tons in the northern, and 121 vessels, of 14,026 tons, in the southern fishery. These were the first to prosecute the fishery in the southern Atlantic, on the coasts of Africa and Brazil, and led the way into the Pacific seas. "Look at the manner," says Burke (1774,) "in which the New England people carry on the whale fishery. While we follow them among the tumbling mountains of ice, and behold them penetrating into the deepest frozen recesses of Hudson's bay and Davis's straits; while we are looking for them beneath the arctic circle, we hear that they have pierced into the opposite region of polar cold; that they are at the antipodes, and engaged under the frozen Serpent of the South. Falkland island, which seemed too remote and too romantic an object for the grasp of national ambition, is but a stage and resting-place for their victorious industry. Nor is the equinoctial heat more discouraging to them than the accumulated winter of both the poles. We learn that, while some of them draw the line or strike the harpoon on the coast of Africa, others run the longitude, and pursue their gigantic game along the coast of Brazil." These are the seas that are still vexed by the American fisheries, which have been pushed, however, into higher southern latitudes than had ever before been visited, and are carried on from the shores of Japan to the icy rocks of New South Shetland. (See *South Polar Islands.*)* They have been principally carried on from Nantucket and New Bedford, and have proved very lucrative. At present, they are also prosecuted with great success from several other places. One class of ships is fitted out for the Pacific in pursuit of the spermaceti whale. These are from 300 to 500 tons' burthen, carrying from twenty-five to thirty men, and are absent about thirty to thirty-six months. Their number is about 170, of about 62,000 tons, and carrying nearly 5000 men. Another class sail to the coasts of Africa and Brazil, in search of the common or right whale. They average about 325 tons each, carry about twenty-five men, and are absent eight to twelve months. The whole amount of tonnage of this class is about 40,000; number of seamen engaged, 3000. The quantity of sperm oil brought home in 1815, was 3944 barrels; in 1820, 34,700; in 1825, 62,240, and, in 1830, 106,800. The quantity of whale or black oil brought in in 1830, was about 115,000 barrels; of whalebone, about 120,000 pounds. The sperm oil is chiefly used at home; and 2,500,000 pounds of sperm candles are made, employing about thirty manufactories. The whale oil and whalebone are chiefly exported to Europe. See an article in the Foreign Quarterly Review (No. 14), by J. R. MacCulloch, and Scoresby's *Voyage to the Northern Whale Fishery* (Edinburgh, 1823), and his *Arctic Regions.*

WHALEBONE; a substance of the nature of horn, adhering, in thin parallel plates, to the upper jaw of the whale. These laminæ vary, in size, from three to twelve feet in length; the breadth of the largest, at the thick end, where they are attached to the jaw, is about a foot. They are extremely elastic. All above six feet in length is called *size bone.*

WHARTON, Thomas, marquis of, an English statesman, was one of the first persons of distinction who joined William III. on his arrival in England, and by that prince was made a privy counsellor and justice in Eyre, south of the Trent. Queen Anne created him earl of Wharton; and in 1709, he was sent as viceroy to Ireland; but the following year he resigned all his employments. Being a zealous whig and firm supporter of the Hanoverian succession, he was favoured by George I., who raised him to the rank of marquis. He died in 1715.

WHARTON, Philip, duke of, son of the preceding, was born in 1699. He displayed, when quite young, talents which attracted notice; and, having been educated under domestic tutors, at the age of fourteen he married clandestinely, to the great disappointment of his father, whose death shortly after left him at liberty to follow his own inclinations. In 1716, he set out on his travels, for the purpose of finishing his studies at Geneva. But, disgusted with the sober manners of that place, he left his governor there, and went to Lyons, and afterwards to the court of the Pretender at Avignon. That prince, highly gratified by his attentions, gave him the title of duke of Northumberland. About the end of 1716, he returned to England, and thence proceeding to Ireland, where he possessed a peerage, he was allowed to take his seat in the Irish house of peers. He then displayed the versatility of his character by defending, with all the powers of reasoning and eloquence, the established government; in consequence of which he obtained a dukedom. On attaining the age of majority, he made his appearance in the English parliament, where he pursued a line of political conduct diametrically opposite to that which he had lately exhibited; distinguishing himself as the warm defender of bishop Atterbury, impeached as an adherent to the house of Stuart. He also published a virulent opposition paper, called the True Briton. Having impoverished himself by extravagance, his estates were, by a decree in chancery, vested in the hands of trustees; and he retired to the continent, and visited Vienna and Madrid. After practising new intrigues, deceiving, by the levity of his conduct, the Spanish court, and the chevalier de St George, and rendering himself contemptible alike to all parties, he deprived himself of all his

* The seas visited by the Americans are, in many parts, little known; the currents are uncertain, and the seamen have had to construct their own maps and charts. Yet shipwrecks have been rare. Two men are always kept at the mast-head on the look-out for land or breakers.

resources, by rejecting an offer of restoration to his title and estate, made him by Sir Robert Walpole. Overwhelmed with debts, he went to Paris, where he lived for some time meanly and disreputably. At length he returned to Spain, and, ruined in health as well as in fortune, he was proceeding towards a mineral spring in Catalonia, when he died at a small village, in 1731. Towards the close of his life, he engaged in writing a tragedy on the story of Mary, queen of Scots. His poems, speeches, and letters, with his life prefixed, were published in 1731, in two volumes, octavo.

WHEAT (*triticum sativum*). Among the different kinds of grain which form the principal nutriment of the civilized world, and to the culture of which civilization is even attributed, by ancient and modern writers, the first rank is universally conceded to wheat. It is now cultivated in almost all temperate climates, throughout the greater part of Europe, in all the provinces of China, in Natolia, Syria, Persia, and the other temperate parts of Asia, in the north of Africa, and at the cape of Good Hope, in the United States, and even in the extreme southern parts of South America. The plant belongs to the family of the grasses, like the other *cerealia*. The spikelets of the flowers are sessile, and disposed on two opposite sides of an axis, the whole forming a terminal spike or ear, which, in one variety, is even branched. The culture of wheat, from time immemorial, and in different soils and climates, has produced numerous varieties, which, in some instances, have even been mistaken for distinct species. Winter wheat, sown in the spring, will ripen the following summer, though the produce of succeeding generations of spring-sown wheat is found to ripen better. White, red, awned and beardless wheat change and run into each other in different soils and climates; and even the Egyptian wheat is known to change into the single-spiked common plant. The most permanent varieties are the red and white grained, and the spring wheat, which is generally red. Wheat succeeds best when treated as a biennial, though it does not remain above one year in the ground. Provided the soil be well prepared and dry, and the grain sown in time, the plants do not suffer from the greatest cold, especially if the ground be covered with snow. Animal substances are the best manure for wheat, as containing much gluten, a substance found in a greater proportion in this grain than in any other; and next in importance is lime, as tending to the same effect by chemical combinations. Wheat yields a greater proportion of flour than any other grain, and is also more nutritive. Gluten is so essential an ingredient in bread, that fermentation cannot go on without it; hence its inferiority in wet seasons, and when the wheat is blighted or ill ripened; and hence the advantage of having a stock of old grain. Wheat starch is made by steeping it, and afterwards beating it in hempen bags. The mucilage, being thus mixed with the water, produces the acetous fermentation, and the weak acid thus formed renders the mucilage white. After settling, the precipitate is repeatedly washed, and then put in square cakes for drying. The straw of wheat, from dry, chalky lands, is manufactured into hats. Leghorn hats are made from a bearded variety of wheat, not unlike rye, raised on poor, sandy soils, on the banks of the Arno, between Leghorn and Florence, expressly for this manufacture. It does not grow above eighteen inches in length, is pulled green, and bleached, like flax, on the gravelly bed of the river. The straws are not split, which renders the plait tougher and more durable. (See *Straw*.) We are ignorant of the country whence this valuable grain was first derived; but it was very early cultivated in Sicily. —Spelt (*T. Spelta*) appears to be a distinct species, and more hardy than common wheat. It has a stout straw, almost solid, with strong spikes, and chaff adhering firmly to the grain. The grain is light, yields but little flour, and makes but indifferent bread. It is raised in Switzerland, in elevated situations, where common wheat would not ripen; and also in Bavaria and other parts of Germany.

WHEEL, Persian, in agriculture. No arable culture is carried on in Persia without artificial watering, and various modes are adopted for raising the element from wells and rivers for this purpose. The Persian wheel is well known, and is of the most simple construction. A great improvement of this wheel has been made at Blair-Drummond. The moss of Kincardine or Blair-Drummond is situated in the parish of that name not far from Stirling, and contains upwards of 2000 acres, 1500 of which belong to the estate of Blair-Drummond It lies upon a bed of clay, which is a continuation of the rich alluvial soil which forms the flat vales called *Carses* of Stirling and Falkirk. This vale or plain had been covered with trees, which appear to have been felled by the Romans, and this, by stagnating the water, ended in producing the moss. Lord Kaimes took possession of this moss in 1766, and, soon after, conceived the idea of floating off the moss into the Frith of Forth, and exposing the alluvial soil for corn culture.

A stream of water sufficient to turn a common corn-mill will carry off as much moss as twenty men can throw into it, provided they be stationed at the distance of 100 yards, from each other. The first step is to make in the clay, alongside of the moss, a drain to convey the water; and, for this operation, the Carse clay below the moss is peculiarly favourable, being perfectly free from stones and all other extraneous substances; and at the same time, when moist, as slippery as soap, so that not only is it easily dug, but its lubricity greatly facilitates the progress of the water when loaded with moss. The dimensions proper for the drain are found to be, two feet for the breadth, and the same for the depth. If smaller, it could not conveniently receive the spadefuls of moss; if larger, the water would escape, leaving the moss behind. The drain has an inclination of one foot in a hundred yards: the more regularly this inclination is observed throughout, the less will the moss be liable to obstructions in its progress with the water. The drain being formed, the operator marks off to a convenient extent, alongside of it, a section of moss ten feet broad; the greatest distance from which he can heave his spadeful into the drain. This he repeatedly does, till the entire moss be removed down to the clay. He then digs a new drain at the foot of the moss bank, turns the water into it, and proceeds as before, leaving the moss to pursue its course into the river Forth; upon the fortunate situation of which, happily forming for several miles the southern boundary of the estate, without the interposition of any other property, depended in some measure the very existence of the whole operations.

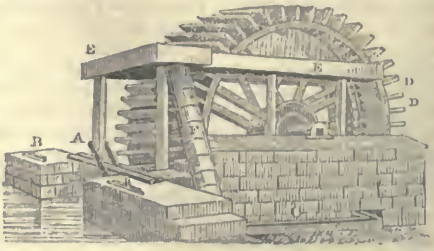
To procure water for floating off the moss was found to be the greatest difficulty; but it was readily overcome by Mr Whitworth, an eminent engineer, and Mr George Meikle, of Alloa, a skilful

millwright, the son of the well known inventor of the thrashing-machine. Mr Meikle gave a model of a wheel of his own and his father's invention, of an entirely new construction. This wheel is so exceedingly simple, and acts in a manner so easy, natural, and uniform, that a common observer is apt to undervalue the invention; but persons skilled in mechanics view machinery with a very different eye, for to them simplicity is the first recommendation a machine can possess. Accordingly, upon seeing the model set to work, Mr Whitworth, with that candour and liberality of mind which generally accompany genius and knowledge, not only gave it the greatest praise, but declared that, for the purpose required, it was superior to what had been recommended by himself, and advised it to be adopted without hesitation.

The water-wheel at Blair-Drummond is twenty-eight feet in diameter and ten feet broad. It is driven by water operating on the float-boards, in the same way as an ordinary mill-water. At the extremities of the radii, or arms, of the wheel, immediately within the float-boards and circumference, is fixed a double row of buckets, as they have been called, borrowing a word from the Persian wheel, to which the part of the present machine has no resemblance, which are more like a section of Louvre boards, or Venetian blinds, or a set of scales, opening upwards when at the bottom of the circumference, and downwards when at the top. These receive two streams of water, which are poured into them within the circumference, when below, which water they discharge when they ascend, and are inverted by the revolution of the wheel into a trough or cistern so placed as to receive it above. By this means a level is gained of seventeen feet, which is sufficient to make the water run to the surface of the moss. The water is conveyed from the cistern of the wheel to the moss for 354 yards below ground, in wooden pipes hooped with iron, eighteen inches in diameter within; and afterwards rises from the pipes into an open aqueduct above 1400 yards in length, and elevated from eight to ten feet above the level of the adjacent grounds.

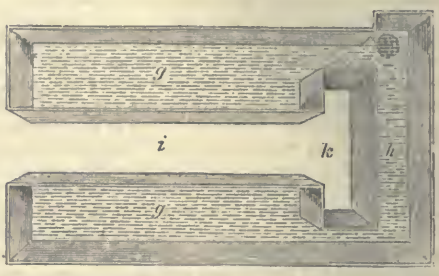
The wheel makes nearly four revolutions in a minute, in which time it discharges into the cistern forty hogsheads of water, and it is capable of lifting no less than sixty hogsheads in a minute; but the pipes will not admit such a quantity of water, nor would it be safe or expedient to drive the machine with a force sufficient to raise so great a quantity. It is probable that the first idea of this machine was derived from the Persian wheel; but its superiority in many respects is so conspicuous as to entitle it to little less praise than the first invention. The wheel was completed and at work in October, 1782, and the total expense exceeded £1000. It has been twice rebuilt. The tenants voluntarily agreed to pay interest on whatever sum it might cost; but their generous landlord relieved them at once from their engagement.

The details of the Blair-Drummond wheel are thus given in the *Farmer's Magazine*, vol. xviii. A is a sluice through which is admitted the water that moves the wheel; B, two sluices through which is admitted the water raised by the wheel; C, a part of one of two wooden troughs and an aperture in the wall, through which the above water is conveyed into the buckets; the other trough is hid by two stone walls that support the wheel; DD, buckets, of which eighty are arranged on each side of the arms of the wheel, in all 160; EE, a cistern, into which the water raised by the buckets is discharged; F, wooden barrel pipes, through which

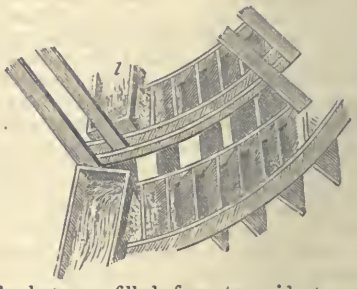



the water descends from the cistern under ground.

The cistern of the Blair-Drummond wheel, as




seen from above, shows the two troughs into which the buckets empty themselves *g g*; the space through which the water flows to the barrel pipes *h*; the place where the arms of the wheel move *i*, and where the float boards and buckets descend *k*.




The buckets are filled from two side troughs *l*, which communicate with the head of water which drives the wheel, as seen at E in the first figure.

WHEEL AND AXLE. See *Mechanics*.

WHEEL-WORK. When an end to be accomplished, in mechanics, cannot be attained with convenience by the simple wheel and axle (see *Mechanics*), it frequently becomes necessary to transmit the effect of the power to the resistance, through a system of wheels and axles acting upon each other. As the wheel and axle is only a modification of the lever, so a system of such machines, acting one upon another, is only another form of the compound lever. In complex wheel-work, the power is applied to the circumference of the first wheel, which transmits its effect to the circumference of the second wheel, which again transfers the effect to the circumference of the second axle, which acts upon the circumference of the third wheel, and this, in the same way, transmits the effect to the circumference of the third axle, and thus the transmission of the force is continued until it has arrived at the circum-

ference of the last axle, to which the weight or resistance is applied. In light work, where the pressure on the machinery is not very considerable, the wheels and axles are allowed to work by the friction of their surfaces, which is increased by cutting the wood so that the grains of the surfaces in contact shall run in opposite directions; also by gluing upon the surfaces of the wheels and axles buffed leather. There are other ways of transmitting the force of each axle to the circumference of the succeeding wheel. A very common method is, by ropes, straps, bands, or belts, round the circumference of the wheel and axle, which act upon each other. The action is in this manner transmitted hy the tension of the rope or strap, and rendered effective by friction with the circumferences on which it is rolled. Wheels and axles connected in this manner are called *band-wheels*. When the wheel and axle from which it receives motion, are intended to revolve in the same direction, the band is not crossed, but simply passed round them in the shortest manner; but, when the wheel is to revolve in a direction contrary to the revolution of the axle, the strap is crossed between them. This latter method of applying the strap, has the advantage of having more surface to act upon, and, therefore, having more friction; but the most usual way of transmitting the action of the axles to the succeeding wheels, is hy means of teeth or cogs, raised on their surfaces. When this is the case, the cogs on the wheels are generally called *teeth*, and those on the surface of the axle are called *leaves*. The axle itself, in this case, is called a *pinion*. The connexion of one toothed wheel with another, in this manner, is called *gear* or *gearing*. The teeth of the wheel, instead of working in the leaves of a pinion, are sometimes made to act upon a form of wheel called a *lantern*, with cylindrical teeth or bars, called *trundles* or *spindles*. Wheels are denominated *spur*, *crown*, or *bevel-gear*, according to the direction or position of the teeth. If the teeth are perpendicular to the axis of the wheel, and in the direction of its radii, it is called a *spur-wheel*. If the teeth are parallel to the axis of the wheel, and therefore perpendicular to its plane, it is called a *crown-wheel*. Two spur-wheels, or a spur-wheel and pinion which work in one another, are always in the same plane, and have their axes parallel; but, when a spur and crown-wheel are in connexion, their planes and axes are at right angles. By this means, therefore, rotatory motion may be transferred from a horizontal to a vertical plane, or *vice versa*. When the teeth are oblique to the plane or axis-wheel, it is a called a *bevelled wheel*. In this case, the surfaces on which the teeth are raised, are parts of the surfaces of two cones. The use of the bevelled wheels is to produce a rotatory motion round one axis, hy means of a rotatory motion round another which is oblique to it; and, provided that the two axes are in the same plane, this may always be accomplished by two bevelled wheels.

WHEELS, Wheel Carriages. See *Locomotion*.

WHEELS, Water. See *Hydraulics*.

WHEELER, Sir George, a learned traveller, was born in 1650, and, in 1667, became a commoner of Lincoln hall, Oxford, on leaving which he travelled into Greece and Asia, in company with doctor Spon of Lyons, their primary object being to copy inscriptions and describe antiquities. On his return, he presented to the university of Oxford a valuable collection of Greek and Latin manuscripts. In 1684, he took orders, obtained a prebend in the church of Durham, and was presented to the rich rectory of Houghton-le-Spring. He was created doctor of divinity in 1702, and died in February, 1724. In 1682, he puhlished an account of his journey into Greece, in the company of doctor Spon, in six books, folio, which is highly valued for its authenticity and information, interesting to the medallist, antiquary, and student of natural history.

WHERRY. See *Boat*.

WHET SLATE. See *Slate*.

WHEY. See *Milk*.

WHIGS AND TORIES. We have already given Defoe's account of the origin of the latter nickname, under the head *Tories*. "As to the word *whig*," says the same writer, "it is Scotch. The use of it began then when the western men, called *Cameronians*, took arms, frequently, for their religion. *Whig* was a word used, in those parts, for a kind of liquor the western Highlandmen used to drink, whose composition I do not remember,* and so became common to the people who drank it. It afterwards became a denomination of the poor, harassed people of that part of the country, who, being unmercifully persecuted by the government against all law and justice, thought they had a civil right to their religious liberties, and therefore resisted the power of the prince (Charles II.). They took arms about 1681, being the famous insurrection of Bothwell bridge. The duke of Monmouth, then in favour here, was sent against them by Charles, and defeated them. At his return, instead of thanks for his good service, he found himself ill treated for having used them too mercifully; and duke Lauderdale told king Charles, with an oath, that the duke had heen so civil to the whigs hecause he was a whig himself in his heart. This made it a court word, and, in a little time, the friends and followers of the duke began to he called *whigs;* and they, as the other party did by the word *tory*, took it freely enough to themselves." (Defoe's *Review*, vii.).

Such was the origin of these celebrated party names, which have continued during the space of 150 years, to he horne by two great divisions of the English aristocracy, and which, at least at many periods, rather deserve the name of factions than of parties. But the origin of the parties themselves was much earlier, and the line of distinction was strongly drawn in the reign of James I., when the long struggle between the crown and the parliament commenced. The court and country parties, the roundheads and cavaliers, the commonwealth's men or republicans and the partizans of absolute power, naturally arose from the mixed character and undefined nature of the English constitution, and the peculiar circumstances in which it was placed by the arbitrary maxims and acts of the Stuarts, and the growing wealth and intelligence of the community. After the dissolution of the monarchy and its subsequent restoration, a new feature appeared in the principles of its partisans—the doctrine of passive obedience and indefeasible right, which may be considered the true characteristic of the tory, at one period of history. The bigotry and tyranny of James II. united all parties against him; and the 'glorious revolution' of 1688 was effected by the combined efforts of the whole na-

* Burnet (Memoirs of his own Times) says, that the word *whiggam*, used by the western Scotchmen in driving their horses, was the origin of the term *whig* applied to them. Others, with Defoe, derive it from the Scotch word *whig*, or *wigg*, signifying *whey*. Jamieson (Dictionary of the Scotch Language) does not venture to decide.

tion. "The whigs," says Hume, "suitably to their ancient principles of liberty, which had led them to attempt the exclusion bill, easily agreed to oppose a king whose conduct had justified whatever his worst enemies had prognosticated concerning his succession. The tories and the church party, finding their past services forgotten, their rights invaded, their religion threatened, agreed to drop, for the present, all overstrained doctrines of submission, and attend to the great and powerful dictates of nature. The nonconformists, dreading the caresses of known and inveterate enemies, deemed the offers of toleration more secure from a prince educated in those principles, and accustomed to that practice; and thus all faction was, for a time, laid asleep in England; and rival parties, forgetting their animosity, had secretly concurred in a design of resisting their unhappy and misguided sovereign." During the reign of William (1688—1702), the parties were not, therefore, so distinctly divided as they had been previously, and have been subsequently. The impeachment of Sacheverell, during the reign of queen Anne, again brought the two theories of government, which formed the original distinction between the whigs and tories, into collision, and, combined with some bed-chamber intrigues and court quarrels, resulted in the appointment of a tory ministry, at the head of which were Bolinghroke and Oxford. On the accession of the house of Hanover (1714), the scale was again changed, and the whole power was now thrown into the hands of the whigs. See *George I.* and *II.* and *Walpole;* on the origin and early character and history of these parties, see Rapin's *Dissertation on the Whigs and Tories*, and Bolingbroke's *Dissertation upon Parties.*

The following remarks from a celebrated whig journal (Edinburgh Review, vol. xxxvii. p. 21—25) will show the state of parties at that critical period. "The accession of the house of Hanover divided England into two parties, the whigs, or friends of the new establishment, and the tories and Jacobites, its secret or avowed opponents. The tories, bigoted to the notion of indefeasible right in the succession to the crown, but apprehensive for their religion if a papist should mount the throne, were distracted between their scruples about the validity of a parliamentary settlement and their fears lest, in subverting it, they might restore, or pave the way for the restoration of the Catholic church. Though deterred by their religious fears, from embarking decidedly in the cause of the Pretender, they kept on terms with his friends, and were not unwilling to disturb, though they hesitated to overturn, a government they disliked, because it was founded on principles they abhorred. The Jacobites, though most of them were zealous members of the church of England, had a stronger infusion of bigotry in their composition, and were ready to restore a popish family, and submit to a popish sovereign, rather than own a government founded on a parliamentary title. It was impossible that either tories or Jacobites should have the confidence of the Hanoverian princes; and, therefore, while those divisions subsisted, all places of power and profit were in the hands of the whigs. Of these two parties, the tories and Jacobites were the most numerous. They included a certain number of the ancient nobility, and comprehended a very large proportion of the landed interest, and, what gave them a prodigious influence in those days, a vast majority of the parochial clergy. The strength of the whigs lay in the great aristocracy, in the corporations, and in the trading and moneyed interests. The dissenters, who held popery in abhorrence, and dreaded the overbearing spirit of the church, were warmly attached to a government that protected their religious liberty, and, as far as it durst, extended to them every civil right. It has perhaps, been fortunate in its results for England, that her church was for so many years in hostility to her government. It was during this temporary dissolution of the vaunted alliance between church and state, that religious freedom, such as it exists among us, struck so deep and vigorous a root as to withstand every subsequent effort to blighten or subvert it. It was during this period that the annual indemnity bills were introduced, which though they have left the stigma, have taken from the test act its sting: and it was during the same period that the toleration act received, in practice, that liberal interpretation which extends its benefits to every possible sect of Christians, the unhappy Catholics alone excepted. This protracted struggle between the adherents of the house of Hanover and the partisans of the Stuarts, was not, however, unattended with disadvantages. It confounded for a time, the ancient distinctions of whig and tory, which had turned on constitutional differences of real and eternal importance, and converted two political sects, or parties, into two factions contending for the crown. The tories, forced to remain in opposition to the government, learned to ape the language, and ended by adopting many of the opinions of their adversaries. The whigs, believing the preservation of their liberties depended on the maintenance of the parliamentary settlement of the crown, and finding themselves in a minority in the country, were constrained to employ measures and sanction proceedings from which their ancestors would have recoiled. To counteract the local influence of the gentry, they practised and encouraged corruption, both within parliament and without, and thus turned against their enemies the weapon they had invented under the Stuarts. To suppress tumults of the rabble, instigated by the vehicles of tory sentiment, annually exported from Oxford, and dispersed over the kingdom, they armed the magistrates with additional, and, till then, unknown powers; and, to defeat the enterprises of foreign princes, acting in conjunction with the disaffected at home, they maintained a standing army in time of peace." The riot act was passed, the triennial act repealed, and the habeas corpus act suspended by the whigs, on the accession of the house of Hanover, and a shameless system of corruption and laxity of political principle introduced, the whole extent of which has but recently been fully exposed to public view. Walpole was finally compelled to retire, by the united opposition of a party of disaffected whigs, acting under lord Carteret (afterwards Granville) and Mr Pulteney, the tories led by Wyndham, and the Jacobites by Shippen, who, Walpole used to say, was the only man whose price he did not know. The whigs still retained their power; and, after some changes, the Pelham administration was formed, in 1743, by the nomination of Henry Pelham to the place of first lord of the treasury. "A more inglorious period of our annals," says the writer last quoted, "is scarce to be found, than from this year to the peace of Aix-la-Chapelle (1748)—defeats and disasters abroad, rebellion (that of 1745) and discontent at home, no concert or activity in the government—the king thwarting

his ministers at every step, and openly giving his countenance to their enemies—his ministers occupied with their mutual jealousies and hatreds, neglecting the business of the nation, and, at length, in the midst of a rebellion which had grown to a formidable height from their supineness and incapacity, resigning, in a body (Feb., 1746), to force Mr Pitt into office, whom they equally feared and hated." The death of Mr Pelham, in 1754, was followed by new dissensions and political intrigues—a mere scramble for office—terminated by the formation of the Pitt (see *Chatham*) and Newcastle (brother of Pelham) administration, in 1757. This ministry, which was forced upon the king, in direct opposition to his own wishes, carried England triumphantly through the seven years' war, but was dissolved in 1761, on the accession of George III.—See Walpole's *Memoirs of the last ten Years of the Reign of George II.* (2 vols., 4to., 1822); and Coxe's *Memoirs of the Pelham Administration* (2 vols., 4to., 1829).

WHIN, in agriculture; a term sometimes applied to furze; which, when cut in the sap, and bruised in a proper way, by flails, or in other modes, makes excellent green fodder, in winter, for horses. It is also useful, in some measure, to sheep stock, as well as the bees.

WHIPPING. See *Flagellation.*

WHIP-POOR-WILL (*caprimulgus vociferus*, Wilson). This remarkable bird arrives in the Middle States of America, about the close of April or the beginning of May, and continues his migrations to the centre of Massachusetts. In the interior, it is said to proceed as high as Hudson's bay. It is a nocturnal bird, and continues the cry, from which it derives its name, till midnight, except in moonlight nights. The Whip-poor-will, when engaged in its nocturnal rambles, is seen to fly within a few feet of the surface of the earth, in quest of moths and other insects. During the day, these birds retire into the darkest woods, usually on high grounds, where they pass the time in silence and repose, the weakness of their sight compelling them to avoid the glare of the light. Their food appears to be large moths, beetles, grasshoppers, ants, and such insects as frequent the bark of decaying timber. Sometimes, in the dark, they will skim within a few feet of a person, making a low chatter as they pass. They also, in common with other species, flutter occasionally round domestic cattle, to catch the insects which approach or rest on them; and hence the mistaken notion of their sucking goats.

WHIRLIGIG; an instrument of punishment, frequently used in the middle ages, and, in later times, on the continent of Europe. In England, it seems to have been employed chiefly in the army, to punish trifling offences, committed by sutlers, Jews, brawling women, and such persons. It is a kind of circular wooden cage, turning on a pivot, and, when set in motion, whirling round with such velocity that the delinquent becomes extremely sick. The punishment was generally public. This instrument is sometimes used in insane hospitals, to overcome the obstinacy of lunatics.

WHIRLPOOL. When two opposite currents, of about equal force, meet, they sometimes, especially in narrow channels, turn upon a centre, and assume a spiral form, giving rise to eddies or whirlpools. The most celebrated of these are the Euripus, near the island of Eubœa, in the Grecian Archipelago; Charybdis, in the strait between Sicily and Italy; and the Maelstrom, off the coast of Norway. When agitated by tides or winds, they sometimes become dangerous to navigators.

WHIRLWINDS sometimes arise from winds blowing among lofty and precipitous mountains, the form of which influences their direction, and occasions gusts to descend with a spiral or whirling motion. They are frequently, however, caused by two winds meeting each other at an angle, and then turning upon a centre. When two winds thus encounter one another, any cloud which happens to be between them is, of course, condensed, and turned rapidly round; and all substances, sufficiently light, are carried up into the air by the whirling motion which ensues. The action of a whirlwind at sea occasions the curious phenomenon called a *water-spout*, which is thus described by those who have witnessed it:—From a dense cloud a cone descends, in the form of a trumpet, with the small end downwards: at the same time, the surface of the sea under it is agitated and whirled round, the waters are converted into vapour, and ascend, with a spiral motion, till they unite with the cone proceeding from the cloud: frequently, however, they disperse before the junction is effected. Both columns diminish towards their point of contact, where they are not above three or four feet in diameter. In the middle of the cone forming the water-spout, there is a white transparent tube, which becomes less distinct on approaching it; and it is then discovered to be a vacant space, in which none of the small particles of water ascend; and in this, as well as around the outer edges of the water-spout, large drops of rain precipitate themselves. In calm weather, water-spouts generally preserve the perpendicular in their motion; but when acted on by winds, they move on obliquely. Sometimes they disperse suddenly; at others, they pass rapidly along the surface of the sea, and continue a quarter of an hour or more before they disappear. A notion has been entertained that they are very dangerous to shipping, owing to the descent, at the instant of their breaking, of a large body of water, sufficient to sink a ship; but this does not appear to be the case, for the water descends only in the form of heavy rain. It is true, that small vessels incur a risk of being overset if they carry much sail; because sudden gusts of wind, from all points of the compass, are very common in the vicinity of water-spouts.

WHISKEY, (a corruption of the Gaelic word *usquebaugh*, which, we believe, signifies *water*,) is the name applied to a well-known liquor distilled from barley, and in great repute both in Scotland and Ireland. It may, indeed, be considered the national beverage of both these countries. *Aqua vitæ* (water of life) is its commercial appellation. For an account of its manufacture, see the article *Distillation* in Supplement.

WHIST. The laws of this game, as taken from Hoyle, are as follows.

*Of Dealing.* 1. If a card is turned up in dealing, the adverse party may call a new deal, if they think proper; but if either of them have been the cause of turning up such card, then the dealer has the option. 2. If a card is faced in the deal, there must be a fresh deal, unless it happens to be the last deal. 3. It is the duty of every person who plays, to see that he has thirteen cards. If any one happens to have only twelve, and does not find it out till several tricks are played, and the rest have their right number, the deal stands good, and the person who played with the twelve cards is to

be punished for each revoke, provided he has made any. But if any of the rest of the players should happen to have fourteen cards, in that case the deal is lost. 4. The dealer should leave his trump card upon the table till it is his turn to play; and after he has mixed it with his other cards, no one has a right to demand what card was turned up, but may ask what is trumps. In consequence of this law, the dealer cannot name a wrong card, which otherwise he might have done. 5. None of the players may take up or look at their cards while they are dealing out. When this is the case, the dealer, if he should happen to miss deal, has a right to deal again, unless it arises from his partner's fault; and if a card is turned up in dealing, no new deal can be called, unless the partner was the cause of it. 6. If any person deals, and, instead of turning up the trump, he puts the trump card upon the rest of his cards, with the face downwards, he loses his deal.

*Of Playing out of Turn.* 7. If any person plays out of his turn, it is in the option of either of his adversaries to call the card so played, at any time in that deal, provided it does not make him revoke; or either of the adversaries may require of the person who ought to have led, the suit the said adversary may choose. 8. If a person supposes he has won the trick, and leads again before his partner has played, the adversary may oblige his partner to win it if he can. 9. If a person leads, and his partner plays before his turn, the adversary's partner may do the same. 10. If the ace or any other card of a suit is led, and the last player should happen to play out of his turn, whether his partner has any of the suit led or not, he is neither entitled to trump it, nor to win the trick, provided you do not make him revoke.

*Of Revoking.* 11. If a revoke happens to be made, the adversary may add three to their score, or take three tricks from the revoking party, or take down three from their score; and if up, notwithstanding the penalty, they must remain at nine: the revoke takes place of any other score of the game. 12. If any person revokes, and discovers it before the cards are turned, the adversary may call the highest or lowest of the suit led, or call the card then played, at any time when it does not cause a revoke. 13. No revoke can be claimed till the trick is turned and quitted, or the party who revoked, or his partner, have played again. 14. If a revoke is claimed by any person, the adverse party are not to mix their cards upon forfeiture of the revoke. 15. No person can claim a revoke after the cards are cut for a new deal.

*Of calling Honours.* 16. If any person calls, except at the point of eight, the adversary may call a new deal if they think proper. 17. After the trump card is turned up, no person must remind his partner to call, on penalty of losing one point. 18. No honours in the preceding deal can be set up, after the trump card is turned up, unless they were before claimed. 19. If any person calls at eight, and his partner answers, and the adverse party have both thrown down their cards, and it appears they have not the honours, they may either stand the deal or have a new one. 20. If any person answers without having an honour, the adversary may consult, and stand the deal or not. 21. If any person calls at eight, after he has played, it is in the option of the adverse party to call a new deal.

*Of separating and showing the Cards.* 22. If any person separates a card from the rest, the adverse party may call it, provided he names it and proves the separation; but if he calls a wrong card, he or his partner are liable for once to have the highest or lowest card called in any suit led during that deal. 23. If any person, supposing the game lost, throws his cards upon the table, with their faces upwards, he may not take them up again, and the adverse party may call any of the cards when they think proper, provided they did not make the party revoke. 24. If any person is sure of winning every trick in his hand, he may show his cards; but he is then liable to have them called.

*Of omitting to play to a Trick.* 25. If any person omits playing to a trick, and it appears he has one card more than the rest, it is in the option of the adversary to have a new deal.

*Respecting who played a particular Card.* 26. Each person, in playing, ought to lay his card before him; and if either of the adversaries mix their cards with his, his partner may demand each person to lay his card before him, but not to inquire who played any particular card.

WHISTON, William, an English divine and mathematician, born in 1667, studied at Clare hall, Cambridge, where he applied himself particularly to mathematics, and displayed his predominant disposition by composing religious meditations. Having taken his first degree in 1690, he was chosen a fellow of his college, and became an academical tutor. Entering into holy orders, he was appointed chaplain to doctor Moore, bishop of Norwich. In 1696, he published a Theory of the Earth, on the principles of the Newtonian philosophy. In 1700, he was appointed deputy professor of mathematics at Cambridge, by Sir Isaac Newton, who, three years after, resigned the professorship in his favour. In 1706, he published an Essay on the Revelation of St John; and the next year, he became Boylean lecturer; and his sermons on that occasion, on the Accomplishment of Scripture Prophecies, were printed in 1708 (8vo.). He had now conceived doubts concerning the doctrine of the Trinity; and, having at length adopted Arian opinions, he was expelled from the university in 1710, and, the following year, was deprived of his professorship. He then removed to the metropolis, and gave lectures on astronomy; but the publication of his Primitive Christianity revived, in 1712 (5 vols., 8vo.), subjected him to the notice of the convocation, and he was prosecuted as a heretic, though the proceedings were ultimately terminated by an act of grace in 1715. Being refused admission to the sacrament at his parish church, he opened his own house for public worship, using a liturgy of his own composition; and towards the close of his life he became a Baptist. In 1719, he published a letter On the Eternity of the Son of God and his Holy Spirit, which prevented him from being chosen a fellow of the royal society, where he was proposed as a candidate in 1720. He subsequently distinguished himself by an abortive attempt to discover the longitude, and by his professed opinions relative to an approaching millennium, and the restoration of the Jews. Among his latest labours were his Memoirs of My own Life (1749—50, 3 vols., 8vo.) He died in London in 1752. Besides numerous original productions, he published a translation of the works of Josephus, with notes, dissertations, &c.

WHITAKER, John, an English divine and antiquary, born at Manchester about 1735, was educated at Oxford, and became a fellow of Corpus Christi college. He began to distinguish himself as an inquirer into English antiquities, by the publi-

cation, in 1771, of the first volume of his History of Manchester, including disquisitions relative to the state of Britain under the dominion of the Romans. The same year appeared his Genuine History of the Britons asserted; and this was followed in 1775, by the second volume of his former work, relating to the Saxon period of English history. Having taken orders, he obtained, in 1778, the college living of Ruan Lanyhorne, in Cornwall. He published, in 1783, a course of sermons on death, judgment, heaven, and hell; and, in 1787, appeared his Mary Queen of Scots vindicated (3 vols., 8vo.) which exhibits much research and zeal for the memory of Mary. Among the latter productions of his pen were The Course of Hannihal over the Alps ascertained (2 vols., 8vo.); The Origin of Arianism disclosed; The Ancient Cathedral of Cornwall historically surveyed (2 vols., 4to.); and Gibbon's History reviewed (1791, 8vo.) He was a contributor to the English and Anti-Jacobin Reviews, and the British Critic. His death took place in October, 1808.

WHITBREAD, Samuel, for several years a leading member of the house of Commons, was the son of an eminent brewer of the same name, to whose extensive business he succeeded. He was born in London, in 1758, and was educated at Eton, whence he was removed to St John's college, Cambridge; after which he made the tour of Europe, under the care of Mr Coxe. Soon after his return, he married the daughter of Sir Charles (afterwards earl) Grey, and, in 1790, was returned to the house of Commons for the borough of Steyning; but for the greater part of his life, he represented the town of Bedford, in which borough and county he possessed a large landed property. He immediately became an active member of the opposition headed by Mr Fox, but distinguished himself by acting, on many occasions, agreeably to his own views, independently of his party. For many years, he was esteemed one of the most shrewd and vigorous opponents of the Pitt administration, and of the war growing out of the French revolution. He was also the conductor of the impeachment against lord Melville, which, although terminating in the acquittal, threw a shade over the close of that statesman's life, and proved a source of extreme concern to the premier. Of the political opinions of Mr Whitbread, those who study the history of the period in which he acted a very conspicuous part in parliament, will judge by their own; but few will be disposed to deny him the praise of being, for many years, a most able, useful, and active senator. The close of his life was melancholy: an over-anxious attention to business in general, but, more especially, to the intricate concerns of Drury lane theatre, produced a temporary aberration of intellect, during which, he suddenly terminated his own life, in 1815.

WHITBY; a seaport of England, in the north riding of Yorkshire, situated at the mouth of the Esk, on the German sea; 46 miles north-east of York, 243 north of London. The Esk forms the harbour, and divides the town into two nearly equal parts, connected by a draw-bridge, so constructed as to admit ships of 500 tons to pass. By the reform act of 1832, it was constituted a borough, returning one member to parliament. Whitby carries on a great trade in coals, and also exports various articles of provision, tallow, &c.; and the alum works in the neighbourhood employ a great number of hands. Shipbuilding is carried on here extensively. The immense mountain of alum rock, and the works for preparing alum, are interesting objects. Population, in 1821, 10,275; in 1841, 11,682.

WHITBY, Daniel, a learned divine, born in 1638; died in 1726. He was a fellow of Trinity college, Oxford. Having distinguished himself by his zeal in attacking the Catholic writers, he was rewarded by Bishop Ward with a prehend in Salisbury cathedral. He took his doctor's degree, but soon after incurred censure for a treatise entitled the Protestant Reconciler. He continued his literary labours, and produced a Paraphrase and Commentary on the New Testament (2 vols., folio); and a treatise on the "Five points" controverted between the Arminians and Calvinists (8vo. 1710.) Towards the close of his life, a complete revolution took place in his literary opinions: he became an Arian, and had a dispute on the subject with doctor Waterland. He left a book called the Last Thoughts of Doctor Whitby.

WHITE. See *Colours.*

WHITE, Henry Kirke; a youthful poet of distinguished ability, was born at Nottingham, March 21, 1785. He was the son of a butcher, and was intended for the same occupation; but the delicacy of his constitution, occasioned his destination to be changed for the more sedentary employment of a stocking weaver. From his infancy, he manifested an extraordinary love of learning, and, at the age of fourteen, produced specimens of poetry worthy of preservation. He was now removed from the stocking-loom to be placed in an attorney's office, and devoted his spare time to the study of Latin and Greek. Increase of knowledge inspired him with the desire to obtain more favourable opportunities for improving his talents; and the advantage of a university education, with the prospect of entering the church, became the great object of his ambition. At length, through the generosity of Mr Wilberforce, and the exertions of the reverend Charles Simeon, he was admitted a student of St John's college, Cambridge. There he applied himself to his studies with such unremitting labour, that his health became deranged, and he died Oct. 19, 1806, deeply lamented, both on account of his virtues and his talents. He published, in 1803, a poem called Clifton Grove; and after his death, his Remains, consisting of poems, letters, and fragments, were edited by Robert Southey (2 vols., 8vo).

WHITE ANTS. See *Termites.*

WHITE BEAR. See *Bear.*

WHITE HORSE VALE; a vale in England, in Berkshire, so called from the figure of a horse in a galloping posture, cut in the side of a chalky hill, as is supposed in memory of a great victory gained by Alfred over the Danes in the year 871. The villagers in the neighbourhood have a custom, from time immemorial, of assembling about midsummer for what they term "scouring the horse," when they remove every weed or obstacle that may have obstructed his figure, and retire to spend the evening in various rural sports.

WHITE LEAD. See *Ceruse.*

WHITE MOUNTAINS; the highest mountains in the United States east of the Mississipi, situated in the northern part of New Hampshire, nearly in the centre of the county of Coos, and extending about twenty miles from north-east to south-west, being the most elevated summits of a long range that extends much farther in a south-west direction. Their base is eight or ten miles broad. They

are about twenty-five miles south-east of Lancaster, seventy north of Concord, eighty-two north-by-west from Portsmouth; lat. 44° 15′ north; lon. 71° 20′ west. They are covered with ice and snow nine or ten months in the year; and, although more than sixty miles from the nearest part of the Atlantic coast, are distinctly seen for a considerable distance at sea. The highest peak is called mount Washington. The next, south of this, is Monroe; the next, farther south, is Franklin; and Pleasant is the third in that direction. The first north of Washington is Jefferson; the second is Adams; the eastern part is Madison. These are the names commonly given to the principal peaks. Their elevation has been a subject of much speculation. It was formerly supposed to be ten or eleven thousand feet; but the barometrical measurements of captain Partridge, and those of Brackett and Wecks, by means of a spirit level, so nearly agree, that we have no longer any reason to doubt that their height was greatly overrated. The measurements of captain Partridge are here given, and the mountains are arranged from north to south:—

| | |
|---|---|
| Mount Adams, | 5328 feet. |
| .. Jefferson, | 5058 .. |
| .. Washington, | 6234 .. |
| .. Monroe, | 4932 .. |
| .. Franklin, | 4711 .. |
| .. Pleasant, | 4356 .. |
| .. Madison (the eastern peak), | 4866 .. |
| The base of the mountains, | 1770 .. |

The elevations here given are estimated from the level of the ocean. Subsequent measurements made by captain Partridge do not perfectly agree with these. These mountains are decidedly of primitive formation. The three highest peaks are composed entirely of fragments of rocks, heaped together in confusion, but pretty firmly fixed in their situations. They consist of granite and gneiss, and are excessively rough, from the great size of the crystals. There is considerable mica in most of them, and in some it is very abundant. The granite contains emeralds, tourmaline, and garnets. Crystals of quartz, pyrites, jasper, porphyry, magnetic iron ore, and several other fossils, are found in very small quantities. No indications of volcanoes have been discovered. In sublimity of scenery, these mountains far excel any others in New England; and it has become fashionable to visit them during the warmest months. Some of the largest rivers of New England originate in the mountains. The Saco flows from their eastern side; the branches of the Ameriscoggin from the north; the Amonoosuck, from the west, flows into the Connecticut; and the Pemigewasset flows from the south, and is the principal branch of the Merrimack. Trees are found on the sides of these mountains; but, as the traveller ascends, he sees the vegetation become small and meagre, and it ceases before he reaches the highest summits.

The *Notch of the White Mountains* is a very narrow defile, extending two miles in length, between two huge cliffs. The entrance of the chasm is formed by two rocks standing perpendicular at the distance of twenty-two feet from each other, one twenty-two, and the other twelve feet high. The mountain, otherwise a continued range, is here cloven asunder, opening a passage for the waters of Saco river. The gap is so narrow that space has with difficulty been obtained for the road from Lancaster to Portland. About half a mile from the entrance of the Notch is seen a most beautiful cascade issuing from a mountain on the right, about 800 feet above the valley. This is called, by Dwight, the Silver cascade. Another called the Flume, falls from a height of about 250 feet, over three precipices, from the first two in a single sheet, and from the third in three streams, which unite in a basin at the bottom. Good descriptions of the White mountains are contained in Dwight's *Travels; New England Journal;* and *N. H. Hist. Coll. for* 1823.

WHITE PLAINS; a post-township, and half shire town, of Westchester county, New York, thirty miles from the city, six east of the Hudson, and fourteen south of Bedford. This place was rendered memorable by a battle fought here, Oct. 28, 1776, between the American and the British troops, and by many other important incidents of that period.

WHITE RENT. See *Quit Rent.*

WHITE RIVER, in Arkansas, has its source in the Black mountains, which divide its waters from those of the Arkansas. The western branches rise, and run a long distance, in Missouri. It receives many large tributaries, and traverses much valuable territory. Its waters are remarkably pure and transparent. Where it flows into the Mississippi, it is 300 yards wide. It is supposed to be navigable for boats 1200 miles; but this is only 500 miles in a direct line. The country on its banks has been sufficiently explored to prove that it affords every inducement to settlers; but no extensive settlements have yet been made. About seven miles from its mouth, it gives off a bayou as broad as itself, that runs at right angles with it, and flows through a deep, inundated forest, and unites with the Arkansas. It strikes that river thirty miles from its mouth. It is not navigable in the latter part of summer; but, at other times, boats which descend the Mississippi with the intention of ascending the Arkansas, always proceed through the White river and this bayou. The Arkansas does not receive this tribute constantly from the White: the bayou runs either way, according to the level of the water at its two ends. The White river will probably furnish water-power for immense manufacturing establishments at a period not far distant.

WHITE SEA; a large gulf of the Arctic ocean, between the peninsula of Canin and the coast of Lapland. It penetrates into the Russian territory, to the depth of between 300 and 400 miles. Its shape is long and narrow; its greatest extent from west to east. It extends from lon. 32° to 46° east, and from lat. 63° 45′ to 68° 25′ north. It receives its name from its being frozen over and covered with snow during the greater part of the year. It is navigable only from the middle of May to the end of September. The shores are surrounded by rocks and small islands; and about thirty rivers, among which the principal are the Northern Dwina, the Onega, and the Mezene, empty themselves into the sea. The mouth of the latter forms a bay, on which is situated the town of Mezene. The Dwina enters the sea by two mouths, which are separated by an island. Upon its banks lies Archangel (q. v.), founded in 1584, and the commercial emporium of this region. Among the islands of the White sea, the largest is the Solovetskoi or Soloffski isle, in the bay of Onega. Two canals, uniting the Dwina with the Wolga and the Dnieper, connect the White sea with the Caspian and Black seas.

WHITE SWELLING, or HYDARTHRUS, (from ὕδωρ, water, and ἄρθρον, a joint). Systematic

writers have generally distinguished this terrible disease into two kinds, namely, rheumatic and scrofulous. The last species of the disease they also distinguish into such tumours as primarily affect the bones, and then the ligaments and soft parts; and into other cases, in which the ligaments and soft parts become diseased before there is any morbid affection of the bones. The knee, ankle, wrist and elbow are the joints most subject to white swellings. The pain is sometimes vehement from the very first; in other instances, there is hardly the least pain in the beginning of the disease. Sometimes the pain continues without interruptions; sometimes there are intermissions; and, in other instances, the pain recurs at regular times, so as to have been called, by some writers, periodical. At the commencement of the disease, in the majority of instances, the swelling is very inconsiderable, or there is even no visible enlargement whatever. In the little depressions naturally situated on each side of the patella, a fulness first shows itself, and gradually spreads all over the affected joint. The patient, unable to bear the weight of his body on the disordered joint, in consequence of the great increase of pain thus created, gets into the habit of only touching the ground with his toes; and the knee, being generally kept a little bent, in this manner soon loses the capability of becoming extended again. When white swellings have lasted a while, the knee is almost always found in a permanent state of flexion. In scrofulous cases of this kind, pain constantly precedes any appearance of swelling; but the interval between the two symptoms differs very much in different subjects. The morbid joint in the course of time, acquires a vast magnitude. Still the integuments retain their natural colour, and remain unaffected. The enlargement of the articulation, however, always seems greater than it really is, in consequence of the emaciation of the limb both above and below the disease. As the distemper of the articulation advances, collections of matter form about the part, and at length burst. The ulcerated openings sometimes heal up; but such abscesses are generally followed by other collections, which pursue the same course. In some cases these abscesses form a few months after the first affection of the joint; on other occasions, several years elapse, and no suppuration of this kind makes its appearance. The patient's health becomes gradually impaired: he loses his appetite and natural rest and sleep; his pulse is small and frequent: and obstinate debilitating diarrhœa, and profuse nocturnal sweats, ensue. Rheumatic white swellings are very distinct diseases from the scrofulous distemper of large joints. In the first, the pain is said never to occur without being attended with swelling. Scrofulous white swellings, on the other hand, are always preceded by a pain, which is particularly confined to one point of the articulation. In rheumatic cases the pain is more general, and diffused over the whole joint. External irritation, either by exposure to damp or cold, or by the application of violence, is often concerned in bringing on the disease; but very frequently no cause of this kind can be assigned for the complaint. As for scrofulous white swellings, there can be no doubt that they are under the influence of a particular kind of constitution, termed a *scrofulous* or *strumous* habit. In this sort of temperature every cause capable of exciting inflammation, or any morbid and irritable state of a large joint, may bring on such disorder as may end in this disease.

WHITE THORN. See *Hawthorn*.

WHITE WARE is made of pipe-clay, which contains so little of oxide of iron that it does not turn red in burning. In Wedgewood's manufactory, the clay is prepared by bringing it to a state of minute division by the aid of machinery. This machinery consists of a series of iron blades, or knives, fixed in an upright axis, and made to revolve in a cylinder, and intersecting or passing between another set of blades, which are fixed to the cylinder. The clay is thus minutely divided, and when sufficiently fine, is transferred to a vat. It is here agitated with water until it assumes the consistence of a pulp, so thin, that the coarser or stony particles subside to the bottom after a little rest, while the finer clay remains in suspension. This last is poured off and suffered to subside; after which it is passed through sieves of different fineness, and becomes sufficiently attenuated for use. To this clay is added a certain quantity of flint, reduced to powder by heating it red-hot, and throwing it into cold water to diminish the cohesion of its parts. Afterwards, it is pounded by machinery, ground in a mill, sifted, and washed precisely as the clay is treated, and made into a similar pulp. In this state the two ingredients are intimately mixed together. The addition of flint lessens the shrinking of the clay in the fire, and thus renders it less liable to warp and crack in the burning. At the same time, by its partial fusion, it communicates to the ware that beautiful translucency which is so much admired in porcelain, and of which the simple clay wares are destitute. (See *China ware*.) The fine pulp of flint and clay being intimately mixed, is then exposed to evaporation by a gentle heat, until the superfluous water is dissipated, and the mass reduced to a proper consistency to work. To produce a uniformity in the thickness of the material, it is taken out in successive pieces, which are repeatedly divided, struck, and pressed together, till every part becomes blended with the rest.

WHITEFIELD, GEORGE, founder of the Calvinistic Methodists, was born at Gloucester, where his parents kept the Bell inn, Dec. 16, 1714. He was the youngest of seven children; and his father dying in his infancy, the care of his education devolved upon his mother. He was sent to a grammar school at Gloucester, where he distinguished himself by a ready memory and good elocution. Being destined to assist his mother in the business of the inn, he was taken early from school, and for some time officiated in a blue apron as drawer. At the age of eighteen, however, he embraced an offer of being entered as servitor at Pembroke college, Oxford, where he became acquainted with the Wesleys, and joined the small society which procured them the name of Methodists. (See *Methodist* and *Wesley*.) Here, in addition to religious preaching, reading, and visits to gaols, and to the poor, he describes himself as lying whole days, and even weeks, on the ground in prayer, choosing the worst sort of food, and dressing in a patched gown and dirty shoes, to acquire a habit of humility. Hearing of his devotional tendencies, doctor Benson, bishop of Gloucester, made him an offer of ordination, at the early age of twenty-one, which he accepted; and he was ordained a deacon in 1736. Such was his strain of preaching, that, at his first sermon at Gloucester, a complaint was made to the bishop that he had driven fifteen people mad; on which the prelate observed that he hoped the madness would not be forgotten before the next Sunday. The week following, he returned to Oxford, where he graduated

B. A., and soon after was invited to London, to officiate at the chapel of the Tower. He preached, also, at various other places, and for some time supplied a curacy at Dummer, in Hampshire. The account sent him by the Wesleys of their progress in Georgia, at length excited in him a desire to assist in their pious labours; and, embarking at the close of 1737, he arrived at Savannah in the following May, where he was received with great cordiality, and acquired considerable influence. Observing the deplorable want of education in the colony, he projected an orphan-house, for which he determined to raise contributions in England, where he arrived in the beginning of 1739. Although discountenanced by many of the clergy, bishop Benson did not scruple to confer on him priest's orders; and, on repairing to London, the churches in which he preached were incapable of holding the crowds who assembled to hear him. He now adopted the design of preaching in the open air, which he seems first to have practised at Kingswood, near Bristol, among the colliers. His ardent and emphatic mode of address attracted several thousands of these people as auditors, on whom his discourses produced a surprising effect, and whose vicious manners and habits he visibly improved. He afterwards preached in the open air in Bristol, and in Moorfields, Kennington, and other places in the neighbourhood of London, to vast assemblages of people, who came from all parts to hear him. In August, 1739, he again embarked for America, and made a tour through several of the provinces, where he preached to immense audiences, with an effect which is pourtrayed, in a very forcible manner, in the autobiography of Benjamin Franklin. He arrived at Savannah in January, 1740, where he laid the foundation of the orphan-house, and, after making another extensive tour, returned to England, where he arrived in the March of the following year. During his absence, his cause had been declining at home; and the differences between him and Wesley, on the doctrines of election and reprobation, deprived him of many followers. His circumstances were also embarrassed by his engagements for the orphan-house; but his zeal and intrepidity gradually overcame all difficulties, and produced the two tabernacles in Moorfields and in Tottenham-court-road. After visiting many parts of England, Scotland and Wales, where he married in 1744, he again returned to America, and remained there nearly four years, not returning until July, 1748. He was soon after introduced to the countess of Huntingdon, who made him one of her chaplains. A visit to Ireland, and two more voyages to America, followed, and, for several years, his labours were unremitting. At length, on his seventh voyage to America, he was carried off by an asthma, at Newburyport, in New England, September 30, 1770, in the fifty-sixth year of his age. The person of Whitefield was tall and well-proportioned, and his features good, with the exception of a cast in one of his eyes. He possessed a high degree of natural eloquence; but his learning and literary talents were mean, and he was a writer only for his own followers. His works were published in 1771 (6 vols., 8vo.).

WHITEHALL; a street in Westminster, containing several public offices. Among these are the Horse-Guards, an edifice so called in consequence of being the station where that part of the troops usually do duty; here is the office of the commander-in-chief of the army: the Treasury, a stone building, near the Horse-Guards, facing the parade; the treasury-board is held in this building; that part of the Treasury which fronts Whitehall is a portion of the old Whitehall palace, erected by cardinal Wolsey; but it has been considerably altered, both in the reign of Charles II. and in 1816; the admiralty office, a large pile, built on the site of Wallingford house; the front has two wings and a portico, supported by four large stone pillars of the Ionic order; besides a hall and other public apartments, here are spacious houses for seven commissioners of the admiralty; and on the top of the building is a semaphore telegraph, by means of which a correspondence is maintained with various parts of the coast.—On the bank of the Thames was a palace called *Whitehall*, built by Hubert de Burgh, earl of Kent, before the middle of the thirteenth century. In 1530, it became the residence of the court, but, in 1697, was destroyed by fire, except the banqueting-house, added by James I. according to a design of Inigo Jones, in 1619. This is a magnificent structure of hewn stone. The building chiefly consists of one room, of an oblong form, forty feet high. The ceiling, representing the apotheosis of James I., was painted by Rubens, and has been retouched by Cipriani. It is adorned with trophies taken from the French in the Spanish campaign.

WHITEHAVEN; a seaport of England, in Cumberland, situated on a bay of the Irish sea, forty miles south-west of Carlisle, 320 north-west of London. It has a good artificial harbour, with six piers; also six yards for ship-building. The entrance of the harbour is defended by four batteries, which formerly mounted in all 98 cannons, including 12 forty-two pounders and 18 thirty-six pounders. These batteries were extended, in 1788, owing to the great alarm occasioned by the landing of Paul Jones, who attempted to burn the town, on the 23d of April in that year. The principal article of export from this port consists of coal, besides which, alabaster, lime, freestone, and grain, are exported in considerable quantities. In return, Whitehaven receives different articles of West Indian, Baltic, American, and Mediterranean produce, in particular flax and linen from Ireland, wine from Portugal, and fruit from the Levant. In addition to its being the centre of a great carrying trade, it is a place of considerable manufacturing importance, the principal articles produced being linen yarn and cloth, sail-cloth, cordage, anchors, nails, checks, ginghams, earthenware, copperas, colours, candles, and soap; the two last named are exported in considerable quantities to the West Indian colonies. Coal, it is supposed, was first raised here by Sir John Lowther, about 160 years ago, since which, the workings have increased rapidly, and the mines now almost rival in extent those of Sunderland and Newcastle; in these the inhabitants are chiefly employed. The coal works are near the sea; and some are wrought even beneath the town, in consequence of which eighteen houses were destroyed in 1791, by the falling in of some of the old works. Some of the pits are 960 feet deep, and the working extends some miles beneath the sea. About 80,000 waggons of coals are supposed to be raised annually, each waggon weighing about forty-three cwt. By the reform act of 1832, Whitehaven was constituted a borough, returning one member to parliament. The population in 1831, including Preston Quarter, which is a suburb, was 15,716; in 1841, 15,841.

In addition to these there are about one thousand sailors belonging to vessels registered in this port.

WHITEHEAD, George, an eminent early leader among the Friends, was born at Semteyg, in Westmoreland, about 1636, and received his education at the free school of Blencouwe, in Cumberland. On leaving school, he was for some time engaged in the instruction of youth; but, as early as the age of eighteen, his journal exhibits him travelling in various parts of England, propagating his religious principles. He endured, as might be expected from the spirit of the times, much persecution, was imprisoned many times, and, in one instance, sentenced to be whipped, which ignominy he calmly endured, and proceeded to preach as before. After the revolution, he was serviceable to the society of Friends by his active services during the time the toleration bill was before parliament, and in making those representations which led, in civil cases, to the admission of an affirmation in lieu of an oath, as well as to other relief. This active, able and determined character lived to a very advanced period, dying, in great respect and esteem, in March, 1723, at the age of eighty-six years. Besides various publications, chiefly controversial, he left behind him some Memoirs of his Life, which were printed in 1725, in 1 vol., 8vo. See *Quakers*.

WHITEHEAD, Paul, an English poet, was born in London, in 1710, and was apprenticed to a mercer in the city. In consequence of having joined Fleetwood, manager of Drury lane theatre, in a bond for £3000, he was confined several years in prison. His first productions were three poems, entitled the State Dunces (1733), Manners (1738), and Honour, a satire. The second produced a prosecution of his bookseller, Dodsley. These circumstances drew on him a considerable share of public notice. Having obtained the appointment of deputy-treasurer to the exchequer, he passed the remainder of his days in retirement at Twickenham. He died in 1774. Besides the writings already enumerated, he was the author of a poem entitled the Gymnasiad (printed in 1774). As an author, he appears to have possessed more judgment than genius; and his works, though popular in their day for their temporary allusion, are now little read. As a man, his morals may be judged of by the fact of his having been a member of the club at Medmenham abbey, the sensual orgies of which were exposed, in revenge, by Wilkes, when prosecuted for his Essay on Woman. Whitehead, however, in the decline of life, acted a benevolent, hospitable and respectable part. A complete edition of his works was first published by Kearsley, in 1777, with a biographical memoir.

WHITEHEAD, William, an ingenious poet, the son of a baker of Cambridge, was born in 1715. At the age of fourteen, he was placed at Winchester school, and obtained a foundation scholarship at Clare hall, Cambridge, which led to a fellowship in 1742. About the same period, he produced two of his earliest and best dramatic pieces, Creusa, and the Roman Father. Three years after, he visited Germany, Italy, Switzerland, and the Low Countries, in quality of a travelling tutor, and, on his return to England, obtained the registrarship to the order of the Bath. He was nominated poet laureate, on the vacancy occasioned in that post by the death of Cibber. His death took place in 1785. In addition to the writings already spoken of, he was the author of the School for Lovers, a comedy (1762); Trip to Scotland, a farce (1771); a Charge to the Poets, a satire; Variety; the Goat's Beard; with several other miscellaneous poems. Mason has written his life (1788).

WHITELOCK, Bulstrode, an eminent statesman and lawyer, the son of Sir James Whitelock, a justice of the king's bench, was born in London, in 1605, and received his education at St John's college, Oxford. He soon obtained eminence as a lawyer, and was consulted by Hampden when under prosecution for refusing to pay ship-money. In 1640, he was chosen M. P. for Marlow, in the long parliament, in which he acted with Selden and the more moderate anti-royalists; but, though averse to the commencement of hostilities, he accepted the office of deputy-lieutenant for Oxfordshire and Buckinghamshire and took the command of a company of cavalry, raised for the service of parliament. In January, 1642—3, he was one of the commissioners appointed to treat with the king at Oxford, and, in 1644, again interfered to promote a pacification. He appeared as a lay-member of the Westminster assembly for settling the form of church government, when he opposed the divine right of the presbytery. In February, 1648—9, he was nominated one of the council of state, and was subsequently sent, by Cromwell, on an embassay to the court of Christina, queen of Sweden, with whom he concluded a treaty. Returning home, he became a commissioner of the great seal, which office he resigned, on the regulation and limitation of the court of chancery, and was then appointed a commissioner of the treasury. He was member for Buckinghamshire, in Oliver's third parliament, and was called, by the protector, to his house of peers. During the government of Richard Cromwell, he acted as one of the keepers of the great seal, and afterwards opposed the designs of general Monk. At the restoration, he retired to his estate at Chilton, in Wiltshire, where he passed the last years of his life, and died in January, 1676. He was the author of Memorials of the English Affairs, from the Beginning of the Reign of Charles I. to the Restoration (1682, folio, an improved edition of which appeared in 1732); Memorials of the English Affairs from the supposed expedition of Brute to this Island, to the End of the Reign of James I. (1706, folio); Notes upon the King's Writ for choosing Members of Parliament, 13 *Car. II.*, being Disquisitions on the Government of England (1766, 2 vols., 4to.); a Journal of the Swedish Embassy, in 1653 and 1654, from the Commonwealth of England, &c. (1772, 2 vols., 4to.); and Whitelock's Labours, remembered in the Annales of his Life, written for the Use of his Children.

WHITEWOOD. See *Tulip-Tree*.

WHITING (*gadus merlangus*); a fish, belonging to the cod family, very abundant along the northern coasts of Europe. It makes its appearance in vast shoals, keeping at the distance of from half a mile to three miles from the shore, and is taken by the line in great numbers. It is considered the most delicate and most wholesome of all the species of cod; but it does not attain a large size, usually not exceeding a foot in length. It resembles the pollock in form, and belongs to the same division of the genus, having three dorsal fins, and the lower lip destitute of a beard. The head and back are pale brown; the lateral line white and crooked; the belly and sides silvery, the latter longitudinally streaked with yellow.

WHITING, Chalk, cleared of its grosser im-

purities, then ground in a mill, and made up into small loaves, is sold under the name of *whiting*.

WHITLOW, in surgery, is an inflammation affecting one or more of the bones of the fingers, and generally terminating in an abscess. In severe cases, the disorder extends to many other parts besides the fingers, making its way above the wrist. There is a similar disorder which attacks the toes. Whitlows differ very much in their degree of violence, and in their depth and extent. Surgical writers usually make four or five varieties. The usual exciting causes of whitlows are various external injuries, as pricks, contusions, &c. The lodgment of a thorn or splinter in the part is another frequent cause. They are much more common in young, healthy persons than in others, and, in many cases, occur without our being able to assign any particular cause for them.

WHITNEY, Eli, a celebrated mechanician, and the inventor of the cotton gin, was born at Westborough, Worcester county, Massachusetts, Dec. 8, 1765. His father was a respectable farmer. Very early he gave striking indications of the mechanical genius for which he was distinguished. His education was of a limited character, until he had reached the age of nineteen, when he conceived the idea of entering a college. Accordingly, notwithstanding the opposition of his parents, he prepared himself, partly by means of the profits of his manual labour, partly by teaching a village school, for the freshman class in the university of New Haven, which he entered, May, 1789. Soon after he took his degree, in the autumn of 1792, he entered into an engagement with a gentleman of Georgia, to reside in his family as a private teacher. But on his arrival in that state, he found that another teacher had been employed, and he was left entirely without resources. Fortunately, however, among the passengers in the vessel in which he sailed, was Mrs Greene, the widow of general Greene, who had given him an invitation to spend some time at her residence at Mulberry grove near Savannah; and, on learning his disappointment, she benevolently insisted upon his making her house his home until he had prepared himself for the bar, as was his intention. He had not been long in her family before a complete turn was given to his views. A party of gentlemen, on a visit to Mrs Greene, having fallen into a conversation upon the state of agriculture among them, expressed great regret that there was no means of cleansing the green seed cotton, or separating it from its seed, remarking that until ingenuity could devise some machine which would greatly facilitate the process of cleansing, it was in vain to think of raising cotton for market. "Gentlemen," said Mrs Greene, "apply to my young friend Mr Whitney: he can make any thing." She then conducted them to a neighbouring room, where she showed them a number of specimens of his genius. The gentlemen were next introduced to Whitney himself; and, when they named their object, he replied that he had never seen either cotton or cotton seed during his life. But the idea was engendered; and it being out of season for cotton in the seed, he went to Savannah, and searched among the warehouses and boats until he found a small portion of it. This he carried home, and set himself to work with such rude materials and instruments as a Georgia plantation afforded. With these resources, however, he made tools better suited to his purpose, and drew his own wire, of which the teeth of the earliest gins were made, which was an article not at that time to be found in the market of Savannah. Mrs Greene and Mr Miller, a gentleman who, having first come into the family of general Greene as a private tutor, afterwards married his widow, were the only persons admitted into his workshop, who knew in what way he was employing himself. The many hours he spent in his mysterious pursuits, afforded matter of great curiosity, and often of raillery to the younger members of the family. Near the close of the winter, the machine was so nearly completed as to leave no doubt of its success. Mrs Greene then invited to her house gentlemen from different parts of the state; and on the first day after they had assembled, she conducted them to a temporary building which had been erected for the machine, and they saw with astonishment and delight, that more cotton could be separated from the seed in one day, by the labour of a single hand, than could be done in the usual manner in the space of many months. An invention so important to the agricultural interest (and, as it has proved, to every department of human industry) could not long remain a secret. The knowledge of it soon spread through the state; and so great was the excitement on the subject, that multitudes of persons came from all quarters of it to see the machine; but it was not deemed prudent to gratify their curiosity until the patent right had been secured. So determined, however, were some of the populace to possess this treasure, that neither law nor justice could restrain them; they broke open the building by night, and carried off the machine. In this way the public became possessed of the invention, and before Mr Whitney could complete his model and secure his patent, a number of machines were in successful operation, constructed with some slight deviation from the original, with the hope of evading the penalty for violating the patent right. A short time after this, he entered into partnership with Mr Miller, who, having considerable funds at command, proposed to him to become his joint adventurer, and to be at the whole expense of maturing the invention, until it should be patented. If the machine succeeded in its intended operation, the parties agreed to share equally all the profits and advantages accruing from it. The instrument of their partnership bears date May 27, 1793. Immediately afterwards, Mr Whitney repaired to Connecticut, where, as far as possible, he was to perfect the machine, obtain a patent and manufacture and ship for Georgia such a number of machines as would supply the demand. On the twentieth of June, 1793, he presented a petition for his patent to Mr Jefferson, then secretary of state; but the prevalence of the yellow fever in Philadelphia, at that period the seat of government, prevented his concluding the business until several months afterwards. We have not space sufficient at our disposal to give a satisfactory detail of the obstacles and misfortunes which, for a long time, hindered the partners from reaping those advantages from the invention which it should have procured for them, and which they had an ample right to expect: and we must therefore refer our readers to an excellent memoir of Mr Whitney, contained in the number of the American Journal of Science and Arts, conducted by professor Silliman, for Jan. 1832. These difficulties arose principally from the innumerable violations of their patent right, by which they were involved in various almost interminable lawsuits. The legislature of South Carolina purchased, in 1801, their right for that state for the sum

of 50,000 dollars—a mere "song," to use Whitney's own phrase, "in comparison with the worth of the thing; but it was securing something." It enabled them to pay the debts which they had contracted, and divide something between them. In the following year, Mr Whitney negociated a sale of his patent right with the state of North Carolina, the legislature of which laid a tax of two shillings and sixpence upon *every saw* (and some of the gins had forty saws) employed in ginning cotton, to be continued for five years, which sum was to be collected by the sheriffs in the same manner as the public taxes; and, after deducting the expenses of collection, the proceeds were faithfully paid over to the patentees. No small portion, however, of the funds thus obtained in the two Carolinas, was expended in carrying on the fruitless lawsuits which it was deemed necessary to prosecute in Georgia. In 1803, the entire responsibility of the whole concern devolved upon him, in consequence of the death of Mr Miller. In 1812, he made application to congress for the renewal of his patent. In his memorial he presented a history of the difficulties which he had been forced to encounter in defence of his right, observing that he had been unable to obtain any decision on the merits of his claim until he had been eleven years in the law, and thirteen years of his patent term had expired. He set forth that his invention had been a source of opulence to thousands of the citizens of the United States; that, as a labour-saving machine, it would enable one man to perform the work of a thousand men; and that it furnishes to the whole family of mankind, at a very cheap rate, the most essential article of their clothing. Hence he humbly conceived himself entitled to a further remuneration from his country, and thought he ought to be admitted to a more liberal participation with his fellow citizens in the benefits of his invention. But the application was rejected by congress on account of the warm opposition it experienced from a majority of the southern members. Some years before, in 1798, Mr Whitney, impressed with the uncertainty of all his hopes founded on the cotton gin, had engaged in another enterprise, which conducted him, by slow but sure steps, to a competent fortune. This was the manufacture of arms for the United States. He first obtained a contract through the influence of Oliver Wolcott, at that time secretary of the treasury, for 10,000 stand of arms, amounting to 134,000 dollars, which was to be fulfilled within a little more than the period of two years. This was a great undertaking, as may be inferred from the facts, that the works were all to be erected, the machinery was to be made, and much of it to be invented; the raw materials were to be collected from different quarters, and the workmen themselves, almost without exception, were yet to learn the trade. The impediments he was obliged to remove were too numerous and great to allow him to fulfil his stipulation as to time, and eight years, instead of two, elapsed, before the muskets were all completed. The entire business relating to the contract was not closed until Jan. 1809, when (so liberally had the government made advances to the contractor) the final balance due Mr Whitney was only 2400 dollars. It is universally conceded that his genius and industry greatly contributed to the improvement of the manufacture of arms, and, indeed, to the general advancement of arts and manufactures; for many of his inventions for facilitating the making of muskets were applicable to most other manufactures of iron and steel. In 1812, he entered into a new contract with the United States for 15,000 stand of arms, and in the mean time executed a similar engagement for the state of New York. In Jan. 1817, he married the youngest daughter of Pierpont Edwards, late judge of the district court for the state of Connecticut. For the five subsequent years he continued to enjoy domestic happiness, a competent fortune, and an honourable reputation, when he was attacked by a fatal malady, an enlargement of the prostrate gland, which, after causing great and protracted suffering, terminated his life on the eighth of Jan., 1825. In person, Mr Whitney was considerably above the ordinary size, of a dignified carriage, and of an open, manly and agreeable countenance. His manners were conciliatory, and his whole appearance such as to inspire respect. He possessed great serenity of temper, though he had strong feelings, and a high sense of honour. Perseverance was a striking trait in his character. Every thing that he attempted he effected as far as possible. In the relations of private life, he enjoyed the affection and esteem of all with whom he was connected. With regard to the results of his genius, we may quote the declaration of Fulton, that Arkwright, Watt and Whitney were the three men who did most for mankind of any of their contemporaries.

WHITSUNTIDE. See *Pentecost*, and *Sunday*.

WHITWORTH, Charles, earl, descended of an ancient family in Staffordshire, was born in 1754, at Leoburne-grange, Kent, the seat of his father, Sir Charles Whitworth, and was educated at Tunbridge grammar-school, on leaving which he obtained a commission in the guards. He soon quitted the army, and, after going rapidly through the usual subordinate diplomatic situations, was appointed, in 1786, minister plenipotentiary to the court of Poland, then the centre of the intrigues which terminated in the dismemberment and annihilation of that unfortunate kingdom. (See *Poland*.) In the autumn of 1788, he proceeded, in the same capacity, to St Petersburg, where, in 1793, he received the red riband of the Bath, to give dignity to his mission, the object of which was a coalition against the French revolutionary government. On his return to England in 1800, Sir Charles was created baron Whitworth of the kingdom of Ireland, and was soon after again despatched abroad on an embassy to the court of Denmark, then complaining of the right of search exercised by the British ships. An adjustment, which proved but short-lived, took place through his exertions in the August of the same year. The ambassador accordingly returned home, and, in the April following, married the duchess dowager of Dorset. After the treaty of Amiens, concluded by lord Hawkesbury and the marquis Cornwallis, lord Whitworth was accredited as plenipotentiary to Paris towards the close of 1802. His mission having terminated abruptly in the renewal of hostilities, he quitted the French capital, May 13, 1803. In the spring of 1813, he was made one of the lords of the bedchamber, and, the year following, took his seat in the house as an English peer, by the title of viscount Whitworth. In the August of 1814, he succeeded the duke of Richmond as viceroy of Ireland, which dignity he enjoyed till 1817, when, the usual period of office being expired, he returned to England, having been in the interval advanced to an earldom. Lord Whitworth died in 1825.

WICK; the county town of Caithness, in Scotland, is situated on the sea-coast, or bay of Wick, distant from Edinburgh 276 miles, by way of Perth and Dunkeld. It takes its name from the Danish word *wick*, which signifies a bay or inlet. The town, which lies low and is irregularly built, is composed of the royal burgh of Wick, and the suburbs of Louisburgh and Pulteney-town. Of late years it has been considerably improved and extended, but it still retains much of the dirty and slovenly appearance of the smaller Scottish towns. Wick is the principal seat of the northern herring fishery; and during the fishing season, when the harbour is filled with vessels, and thousands of boats are continually floating across the bay and the surrounding sea, it presents an animating and bustling appearance. Many thousands of fishermen, curers, and women, employed in gutting and packing the herrings, are then congregated from all parts of the sea coast of Scotland, and from the remotest parts of the Highlands. The herrings, when cured, are principally exported to the Baltic ports, and to Ireland. There are no manufactories, but various distilleries, rope, and shipping companies, &c. have lately been established. Population of the burgh and parish of Wick in 1841, 10,393.

WICKLIFF, WICLEF, OR DE WYCLIFFE, JOHN, an eminent reformer of Christianity, or, as he is often styled, the Morning Star of the Reformation, was born about 1324, in Yorkshire, near the river Tees, in a parish whence he takes his name. He studied at Queen's college, Oxford, and then at Merton, in the same university, and distinguished himself by his attention to school divinity and the works of Aristotle, the most abstruse parts of whose writings he is said to have committed to memory. He also became intimately conversant with the civil and canon law, and with the laws of England; to which he added a diligent perusal of the Scriptures, and the works of the Latin fathers of the church. As early as 1356, he inveighed against the authority of the pope, in a treatise Of the Last Age of the Church; and, in 1360, he was active in opposing the encroachments and intrigues of the mendicant friars, who took every opportunity to establish their credit and power in the university. In 1361, Wickliff was appointed master of Baliol college, and was presented to a college living; and, in 1365, Simon Islip, the primate, constituted him warden of Canterbury college, which he had then newly founded at Oxford. An equal number of regular and secular priests having been placed as fellows in this college, by the founder, after his death disputes arose, which led to the expulsion of Wickliff and the other three secular members of the college in 1367. On an appeal to Rome, the measure received the sanction of the papal court—a circumstance which naturally exasperated the mind of the ejected warden against the pope. In 1372, he took the degree of D.D., and then delivered lectures on theology with great applause. Disputes at this period existed between king Edward III. and the court of Rome, relative to the homage and tribute exacted from king John; and the English parliament had determined to support their sovereign in his refusal to submit to the vassalage, in which his predecessors had been forced to acquiesce. A monk came forward as the advocate of the church; and Wickliff wrote a reply, which made him favourably known at court, and procured him the patronage of John of Gaunt, duke of Lancaster. In 1374, he was sent to Bruges, in Flanders, to confer with the pope's nuncio on the liberties of the English church; and the same year, the king gave him the valuable rectory of Lutter-worth, in Leicestershire; and he shortly after obtained a prehend in the collegiate church of Westbury, in Gloucestershire. He had now taken a decided part as to ecclesiastical politics; and having, in his writings, not only charged the bishop of Rome with simony, covetousness, ambition and tyranny, but also styled him antichrist, he was denounced as a heretic. Nineteen articles of alleged false doctrine, taken from his works, were transmitted to pope Gregory XI., who, in 1377, returned three bulls, addressed to the archbishop of Canterbury and the bishop of London, ordering the seizure and imprisonment of Wickliff, and requiring the king and government, if necessary, to assist in extirpating the errors he had propagated. Edward III. died before the bulls arrived, and the duke of Lancaster, who chiefly ruled the kingdom under his nephew, was the avowed protector of the refractory divine Therefore, when he appeared at St Paul's church, on the citation of the two prelates, he was accompanied by a vast concourse of people, and was supported by the duke of Lancaster and the earl marshal; and an altercation taking place between the noblemen and the bishops, the meeting was dissolved in a tumultuous manner. Wickliff afterwards attended at Lambeth palace, and delivered to the two prelates a defence or explanation of the propositions objected against him. The populace flocked together in crowds to protect him; and he was dismissed without any judgment taking place. Pope Gregory XI. dying in March, 1378, the commission he had issued expired, and Wickliff escaped further question for the present. In consequence, probably, of anxiety and fatigue, he was seized with a severe fit of illness; on his recovery from which, he applied himself anew, by writing and preaching, to his task of undermining the papal authority. The disputes then existing in the church, between the rival pontiffs, Urban VI. and Clement VII., furnished him with an opportunity for exposing the exorbitant pretensions of the court of Rome, of which he freely availed himself. Having, in some of his works, advanced some peculiar notions relative to the Eucharist, they attracted the notice and condemnation of the chancellor of the university of Oxford; on which Wickliff appealed to the king and parliament in 1382; but not being supported, as he had anticipated, by his former patron, John of Gaunt, he was compelled to submission; and he accordingly made a confession of his errors at Oxford, before archbishop Courtney, six bishops, and other clergymen, who had already condemned his tenets as heretical. The principal points on which Wickliff was condemned by the synod were, 1st. his deviation from orthodox language, respecting the presence of Christ in the sacrament of the altar; 2d. his doctrine, that a pope, bishop or priest, who is in a state of mortal sin, has no authority over the faithful, and that his acts are null; 3d. his assertion, that Scripture prohibits ecclesiastics from having temporal possessions; and, 4th. the position, that where contrition is sincere, confession to a priest is useless. His opinion respecting the Lord's supper is supposed to have nearly resembled that of Luther and his followers. A royal letter was procured by the primate, addressed to the chancellor and proctors, directing them to expel from the university and town of Oxford all who should harbour Wickliff or his followers, or hold any com-

munication with them. He was, however, allowed to retire unmolested to his rectory at Lutterworth, where he continued to preach, and completed a translation of the Scriptures, in which he had engaged some years before. In 1383, he was seized with palsy; and this attack furnished him with an excuse for not making his appearance to a citation of pope Urban VI. A second paralytic stroke terminated his life on the 31st of December, 1384; but his doctrines, or rather his spirit, survived him; and however his successors might vary from him in their exposition of mysterious dogmas, they owed to him the example of an open attack, by a learned clergyman, upon the authority of the church and the jurisdiction of the supreme pontiff. Payne, one of his disciples, carried his system into Bohemia, where it flourished in spite of persecution, and awakened the zeal of Huss, who, although he did not adopt all the doctrines of Wickliff, seems to have shared his hostility to the Roman clergy. (See *Oldcastle*, *Huss*, and *Reformation*). "The new opinions on religion which now arose," says Mackintosh (History of England), "mingled with the general spirit of Christianity, in promoting the progress of emancipation, and had their share in the few disorders which accompanied it. (See *Wat Tyler*). Wickliff, the celebrated reformer, had now become one of the most famous doctors of the English church. His lettered education rendered him no stranger to the severity with which Dante and Chaucer had lashed the vices of the clergy, without sparing the corruptions of the Roman see itself. His theological learning and mystical piety led him to reprobate the whole system of wealth and worldliness, by which a blind bounty had destroyed the apostolical simplicity and primitive humility of the Christian religion. Viewing doctrines in this light, he might occasionally fluctuate in his feelings or language respecting them, without being liable to any grave imputation of inconsistency. This temper, however, adds to the difficulty of ascertaining his opinions: necessarily progressive, they could not have been the same at every period of life. It is possible, that if he sometimes yielded to authority, he might have been actuated more by sincere deference than by personal apprehension." The works of Wickliff are numerous, but most of them remain in manuscript, in the libraries of Oxford, Cambridge, and Dublin, the British museum, and Lambeth. Among those which have been printed, are Trialogus (1525, 4to.; republished at Frankfort, 1753, 4to.), containing a body of theology, in the form of a conversation between Truth, Falsehood, and Wisdom; Wickliff's Wicket, or a Learned and Godly Treatise of the Sacrament (Nuremberg, 1546, 8vo.; reprinted Oxford, 1612, 4to.); the Prologue to his Translation of the Bible, published by R. Crowley, under the title of the Pathway to Perfect Knowledge (1550, 12mo.); and his version of the New Testament (first edited by the reverend J. Lewis, London, 1731, folio, and more recently by Baber, 1810, 4to.). The version of the Old Testament remains unprinted. Wickliff was a bold and original speculator, both in religion and politics; and the influence of his writings on the state of public opinion in Germany, may be estimated from the proceedings against him at the council of Constance, after his death, when, his sentiments being condemned on the score of heresy, his bones were ordered to be taken up and burnt; and this sentence was afterwards (1425) executed. Among many biographical memoirs relating to him, may be mentioned the Life and Opinions of John de Wycliffe, principally from his unpublished Manuscripts, by Robert Vaughan (2 vols., 8vo., 1828), and Lebas's Life of Wickliff (1832).

WICKLOW, a martime county of Ireland. It is bounded by the sea on the east, by Dublin county on the north, by Kildare, Dublin and Carlow, on the west, and by Wexford on the south. It is about forty English miles long and thirty-three broad, and contains 781 square miles, or about 500,000 English acres. It contains fifty-eight parishes, of which forty-nine are in the bishopric of Dublin, six in the diocese of Loughlin, and three in that of Ferns. The county is divided into six baronies and half baronies. A great part of Wicklow is occupied with rocky mountains and bogs. In the north and west the mountains are bold and rugged, but in the east they are separated by fine wooded and romantic glens, such as those of Dargle, the Downs, the vale of Immalee, and Glendalloch. The central mountains consist of granite; and argillaceous schistus composes the lower hills. On the north is the remarkable chasm in a ridge of granite called the Scalp. The minerals of Wicklow are gold, lead, and copper. Native gold has been found on the north-east side of the mountains, Croughan Kenshela, in a stream which falls into the Ovoco. In 1796, £10,000 worth was found in pieces, one of which weighed nine, another eighteen, and a third twenty-seven ounces. Government then explored the mines, but no veins were found, and the works were abandoned. Lead has been wrought at Glenmaher and Glendalloch, at the latter of which places there were, in 1809, three smelting houses, and about 18,000 cwt. of bar iron were made weekly. Copper has been wrought to a considerable extent at Cronebane and Ballymurtagh. The works at Cronebane produced, in 1809, 3,000 tons of ore at a cost of £8,000. The works are now discontinued. Oxide of tin was found in the same stream in which gold occurred.

Wicklow has no river navigable within its limits. The Liffey rises in the north-west of the county. The Ovoco runs into the sea at Arklow, the Fartrey does the same at Wicklow, and the Slaney rises in the south-west of the county. Five of the streams produce fine waterfalls, the principal of which is at Powerscourt, 360 feet high. The chief lakes are Lough Bray, Lough Tay, Lough Dan, and the Loughs of the Seven Churches.

The climate of Wicklow is remarkably fine, especially on the east coast. The myrtle grows in such profusion as to be used for stable brooms, and grapes ripen out of doors. The principal crops are wheat, barley, oats, and potatoes. Summer fallow being little known, the wheat follows the potatoe crops, and sometimes it is taken after white crops, or upon the lea. The barley comes after potatoes or turnips. The crops are uncommonly abundant, though the soil is of a light quality. Dung, marl, and limestone gravel, are the chief manure. Scotch agricultural implements are now in general use. Most of the improved breeds of cattle have been introduced. The dairies, which are numerous, are employed chiefly in feeding veal for the Dublin market. In the north, early lambs are fattened to a considerable extent. The mountains of Wicklow afford good pasturage for sheep. The number of breeding ewes is about 20,000. The South Down are common, and many of the native flocks have been crossed with them. Merinos have also been introduced.

The principal manufactures of Wicklow are woollen and cotton goods. Besides the coarse woollens for common use, flannel is manufactured to a great extent. From 5,000 to 7,000 pieces were sold annually before 1808 at the flannel sale at Rathdrum. The cotton manufacture was then carried on with much spirit at Stratford-upon-Slaney. The linen manufacture has always been inconsiderable. The principal towns, &c. are Wicklow, the county town, Baltinglas, Blessington, and Carysfort, which were formerly burghs. The villages are Rathdrum, Bray, Arklow, Stratford-upon-Slaney. Wicklow is boldly situated on the declivity of a lofty mountain. The church, which has a high square tower, is pleasantly situated on a lofty eminence. The jail, the court-house, and the market-house, are good modern edifices; and about a mile to the south-east of the town, are two light-houses. Population of the county in 1841, 126,143.

WICQUEFORT, Abraham de, an eminent publicist of the seventeenth century, was born at Amsterdam, in 1598. The early part of his life was spent in Germany; and the elector of Brandenburg, in 1626, appointed him to take charge of his interests at the court of Paris. In this capacity he continued to reside at the French capital till 1658, when a suspicion arising of his having made improper disclosures to the states-general, he was arrested at the instance of cardinal Mazarin, and sent to the Bastile. After a twelvemonth's imprisonment in this fortress, he obtained liberty to return to Holland. De Wit, then at the head of the Dutch government, gave him the appointment of historiographer to the states, and induced him to undertake the task of writing a history of his native country, while the duke of Brunswick-Lunenburg made him his resident at the Hague. But he was arrested and condemned to perpetual imprisonment, for conveying intelligence to the enemies of his country. By the courage of one of his daughters, however, he escaped, after a confinement of four years, and fled to Zell, in 1679. Here he occupied himself for two years in unavailing attempts to procure a reversion of his sentence, and is said to have died of chagrin, in 1682. Besides his History of the United Provinces, De Wicquefort was the author of a work on diplomacy, entitled *L'Ambassadeur et ses Fonctions* (4to., 2 vols.), and some translations of travels from the Spanish and German languages into Dutch.

WIDDIN, or VIDIN; a fortified town, and capital of a sangiacat in Rumelia, on the right bank of the Danube, with 25,000 inhabitants. The sultan, Selim III., having formed the design of dissolving the corps of janizaries, and supplying their place by troops organised and disciplined according to the European military system, proceeded to execute his plan, by successively disbanding the different frontier garrisons. The order to discontinue their pay was the signal of insurrection to the garrison of Widdin, commanded by the bold and artful Paswan Oglu. His father had been put to death by the grand vizier, jealous of his power and covetous of his wealth; and Paswan Oglu had been himself detained as a prisoner. Eager for revenge, he seized the opportunity which now offered itself, and, at the head of the disbanded janizaries, chased the pacha from the town. The inhabitants, discontented with the new impositions that had been made, to meet the expenses of the new military system, readily joined him; and he now proceeded to levy contributions for the support of his authority in the neighbouring districts. He also won over the Greeks by promises of religious freedom. In the first campaign (1797), he was almost constantly successful; and the following year he succeeded in compelling the capudan pacha to raise the seige of Widdin, and to retreat, leaving the northern provinces at his mercy. The Porte was finally compelled to yield to his demands, and, in 1798, conferred upon him the dignity of pacha, with the government of Widdin, which he held till his death in 1807.

WIDGEON; a species of duck, which in winter frequents our inlets of the sea and fresh-water lakes; The American widgeon is most abundant in Carolina, where it frequents the rice plantations, and is much complained of by the planters. It is often called *bald-pate*, from the white on the top of the head. It is a constant attendant on the canvass-back duck, by the aid of whose labours it contrives to make a good subsistence, and with whom it lives in a state of perpetual contention. The front and crown are cream-coloured; a band of deep glossy green extends from the eye backwards; the throat, chin, and sides of the neck are dull yellowish-white, thickly speckled with black; the breast and hind part of the neck hoary bay; immediately below the wing-coverts is a large spot of white.

WIDMER, Samuel, a distinguished mechanician and manufacturer, the nephew of Oberkampf, and his successor, was born in 1767, in the Aargau, was instructed by Oberkampf, and studied much himself. He applied Berthollett's chemical process for bleaching linen on a large scale, and, in 1792, invented the mode of printing calico with copper cylinders; but the revolution prevented him from applying this invention to a considerable extent immediately. The machine was capable of doing as much as twenty-four workmen. He then invented a machine for engraving, and, in 1809, the method of heating the water in the dyeing kettles by steam. After this he discovered a dye (*le vert solide d'une seule application*), for which the royal society in London had offered a prize of £2000. Until then, the *vert solide* could be used only by a double application of colour, either of indigo upon yellow, or of yellow upon indigo. Widmer did not communicate his invention to the royal society, and, of course, did not receive the prize. He afterwards visited England, where Sir Joseph Banks received him with much attention. His last invention was a machine for bleaching linen, which is called *hydrocyclephore*, because the water passes in a circular course, and at a boiling heat, into and out of the tin vessels. Louis XVIII. gave him the order of the legion of honour. He died in 1824. His private character was that of a charitable and generous man.

WIED. See *Neu Wied*.

WIELAND, Christopher Martin, was born in the town of Biberach, in Suabia, Sept. 5, 1733, where his father, a Protestant minister, gave him an excellent education. The talents of the young Wieland early attracted the attention of his teachers. In his twelfth year, he composed Latin and German verses. In his fourteenth year he was sent to Klosterbergen, near Magdeburg. Here he penetrated deeply into the spirit of the ancients. Here, also, he became acquainted with the works of Steele and Addison, though in very imperfect translations, and Shaftesbury made a lasting impression upon him. He also studied Voltaire and D'Argens. In his sixteenth year, he left Kloster-

bergen, and lived a year and a half with a relation in Erfurt, who prepared him for the university. In 1750, he returned to his native city, where he fell in love with Sophia von Guttermann. In the autumn of 1750, he went, against his inclination, to the university of Tübingen, to study law. He continued to study the literature of his own and foreign countries, and wrote, in 1751, his Ten Moral Letters, addressed to Sophia, which met with a very favourable reception. He also wrote, at this time, a didactic poem called Anti-Ovid, an unimportant production. In 1752, he returned to Biberach, and then went to Zürich as a literary companion to Bodmer. Here he read the works of the authors who then gave a new impulse to German literature—Hagedorn, Gleim, Haller, Schlegel, Gellert, Klopstock, Sulzer, and others. Zürich itself contained several distinguished authors. The example of Bodmer, a hasty writer, had much influence on his habits of composition at this time, as appears from the number of his productions at this period. In 1756, the seven years' war (q. v.) broke out. Wieland was inspired by the deeds of Frederic the great, and intended to write a poem, exhibiting the ideal of a hero, for which purpose he chose the story of Cyrus. The first five cantos appeared in 1757, and the second edition of them in 1759: but the poem remained unfinished. After some unsuccessful attempts in dramatic poetry, he again turned his talent to the more congenial field of Grecian story, and published Araspes and Panthea, an episode from the Cyropædia of Xenophon. In 1754, he left Bodmer's house, became a tutor, and, in 1760, returned to his native town. Various circumstances, among others that of finding the object of his early love married, made him dissatisfied with Biberach. He now undertook a task not very congenial to his previous habits, accustomed as he was to the study of Greek, Roman, and French literature, and naturally inclined to light and gay subjects. He translated twenty-eight of Shakspeare's plays, (1762—68, 8 vols.) Eschenburg afterwards added the fourteen remaining ones. Wieland soon found a home in the house of count Stadion, who had been minister of the elector of Mayence, was a man of considerable knowledge, and an enemy to all kinds of fanaticism. His intercourse with this new friend produced a decided change in his character. He had previously been prone to religious mysticism, but exhibited, in his subsequent productions, tendencies of an opposite character. Count Stadion's library was particularly rich in French and English literature, and contributed not a little to this change of sentiment in Wieland. He has often been reproached with a predilection for subjects of a voluptuous character, in his subsequent works. It is impossible to exculpate him entirely from this charge; but it ought to be stated that his own life was wholly free from the stain of licentiousness. The first production of his bearing the impression of Greco-Gallic sensuality, was the tale of Nadine, which he himself calls a composition in Prior's manner. This was followed, in 1764, by the Adventures of Don Sylvio of Rosalva, or the Victory of Nature over Fanaticism. In this, Don Quixote was his model; but the work of Wieland was far inferior to that of Cervantes in plan and execution. In 1766 and 1767, appeared his Agathon, which established his reputation. It had occupied him long, and will long preserve his memory. Love continually employed his thoughts, and many fragments of poems by him, on this subject, exist; but his chief work devoted to it is Musarion (1768), a production distinguished for grace, ease, and harmony, which he himself calls a philosophy of the graces. In 1770, he wrote the Graces; and the new Amadis, in 1771, a poem which celebrates the triumph of intellectual over mere physical beauty. The poet treated this subject again, in the latter part of his life, in his Crates and Hipparchia. In 1765, Wieland married, and, in 1769, was appointed *professor primarius* of philosophy at the university of Erfurt. From this time, he no longer occupied himself exclusively with amatory poetry. In his Cupid Accused, he defends this kind of poetry; and in the Dialogues of Diogenes of Sinope (1770), he gave a general vindication of his philosophical views. Under the title Contributions to the Secret History of the Human Understanding and Heart, from the Archives of Nature (1770), he wrote against Rousseau. The many improvements and noble plans of Joseph II. of Austria gave occasion, in 1772, to his Golden Mirror. In 1772, he went to Weimar, in consequence of an invitation from the duchess Anna Amalia of Weimar, to superintend the education of the two princes, her sons. Here he had leisure for literature; and a moderate salary, and the promise of a pension for life, set him at ease. He now turned his attention to dramatic poetry, and wrote his Choice of Hercules, and his Alcestc. He also undertook the superintendence of the German Mercury, a monthly journal, which he continued to edit to the end of his life. His views, as exhibited in this journal, showed too much of the narrow conventional spirit of French criticism, and he was, therefore, attacked by Göthe and Herder. The first wrote a satire against him under the title of Gods, Heroes, and Wieland, which Wieland answered with his characteristic mildness. Göthe and Herder were soon drawn to Weimar, where the duchess Amalia formed a galaxy of talent and genius, such as has seldom been witnessed. In company with them, Wieland here laboured with great activity for more than twenty years. His philosophy breathes the spirit of Socrates, sometimes with a mixture of that of Aristippus. He has enriched German literature with works which have made known to his countrymen the merits of the French and English writers. His historical productions do not constitute large works, but they please by the lively imagination, knowledge of languages, sound judgment, and benevolent spirit which they display. These graver occupations did not diminish his poetical fertility, which appeared to great advantage in his History of the Abderites (1773), a delightful work, in which the muse of wisdom appears disguised in the garments of satire. He also wrote tales, partly after foreign originals, partly from his own invention. But Oberon, a romantic epic, is the most successful of his larger works, though the tone and the form are both liable to censure. In addition to his original works, Wieland prepared translations of Horace and Lucian; and, though the scholar will often meet with paraphrases which he may not like, these translations have been of much service to the public at large. Wieland himself declared his Letters and Commentaries on Horace those of his works on which he placed the greatest value, and from which his head, heart, taste, conceptions, and character could be best known. From his constant study of Lucian originated (1791), an original work, Peregrinus Proteus, to which his Agathodæmon may be considered

a pendant. A uniform edition of his works was published at Leipsic, in two editions, 4to. and 8vo., 36 vols., with six supplementary volumes, 1794, et seq. (new edition by Graber, begun in 1820; a pocket edition, in 16mo., 51 vols., was begun in 1824). The author was enabled, by the sale of this edition of his works, to buy an estate, called Osmannstädt, near Weimar, where he intended to spend the evening of his life. As his manner of living was simple, his moderate income was adequate to his wants, though his wife bore him fourteen children within twenty years. From 1798 to 1803, he continually lived in Osmannstädt, and occupied himself with literary labours, among which his Attic Museum should be mentioned. Aristippus and some of his Contemporaries also belongs to this period. In 1803, he sold his estate, from views of economy, and lived again in Weimar, where he now found Schiller, with whom he soon became intimate. After the death of the duchess Amalia, of Schiller, and many of his other friends, he sought to divert his melancholy by literary labours. We owe to this circumstance his translation of Cicero's Letters. The emperor Alexander gave him the order of St Anne, and Napoleon that of the legion of honour. He was elected a member of the French institute, and died Jan. 20, 1813: his wife had died in 1801. The remains of both rest in the same tomb, which bears an inscription, composed by Wieland himself, commemorative of the love which had united them throughout life. Wieland became, at a late period of his life, a freemason.

WIELICZKA; a town of Austrian Poland, in the kingdom of Galicia, seven miles south-east of Cracow, remarkable for its salt mines, which extend not only under the town, but to a considerable distance on each side. The mines were worked as early as the middle of the thirteenth century; but, notwithstanding the quantity of salt which has been taken out, their treasures appear as inexhaustible as ever. They are situated at the outskirts of the Carpathian mountains, and descend to the depth of about fifteen hundred feet. The miners commonly go down on ladders; but the visitor may have the accommodation of regular stairs cut in the salt. At a depth of three hundred feet on the first floor, is St Anthony's chapel, hewn out of the salt rock. In the upper galleries, where the mining was carried on irregularly, the roofs of the great caverns excavated have often fallen in, and it has become necessary to prop them up with wood; but in the lower galleries, where the operations have been subsequently carried on, and conducted with more regularity, large masses are left standing, which serve as pillars to the roof. The workmen are divided into three bands, which relieve each other alternately, each spending eight hours in work, and passing the rest of the time above ground with their families, which do not, as has been asserted, reside in the mines. The salt is cut out in long narrow blocks, and then, after being broken into smaller pieces, is packed up in barrels. There has been much exaggeration in regard to these mines, some travellers speaking of them as a subterraneous city with extensive streets, buildings, &c. One of the caverns, called the *great hall*, contains lustres hanging from the roof, and all the curiosities, crystals, petrifactions, &c., which have been found here. Seven hundred thousand quintals are annually raised, which, with two hundred thousand quintals raised at Bochnia, in the vicinity, yield a net amount of £180,000 annually. There are three qualities of salt obtained here. The worst sort is mixed with clay, and has a greenish appearance. The best appears in the form of cubic crystals, and is of a dark-grayish colour, with a mixture of yellow. The salt-works formerly belonged to Poland, but have been the property of Austria, with a slight intermission, since 1772. They are supposed to be connected with the salt formation in Walachia, and thus to have an extent of upwards of 500 miles. See Fichtel's *History of the Salt Mines in Transylvania* in German, Nuremberg, 1780.

WIER'S CAVE. See *Cave.*

WIFE. See *Husband and Wife.*

WIG is derived from the Latin *pilus* in this way:—*pilus*—Spanish *pelo*, whence *peluca*; French *perruque*; Dutch *peruik*; English *perwick*, *perwig*, *periwig*, shortened to *wig*. The use of false hair is traced back to the ancients. Xenophon says that Astyages wore a peruke about the fiftieth Olympiad, in which the hair was thick. They were afterwards worn by several of the Roman emperors. Lampridius relates of the wig of Commodus, that it was tinged with fragrant colours and powdered with gold dust. After this period, we find no trace of wigs in history till the sixteenth century, when John, duke of Saxony, wrote to Arnold von Falkenstein, in Coburg, to order a handsome wig to be made in Nuremberg, "but privately, so that it may not be known to be for us, and of a flaxen colour and curled make, of such a fashion, moreover, that it may be conveniently set upon the head." France afterwards became the peculiar country of wigs, whence they spread to all parts of Europe. Henry III., (1575—89), having lost his hair by disease, caused by his debaucheries, covered his cap, such as was then in general use, with false hair. Under Louis XIII., (1610—43), they came into common use. Even those who had no necessity for them, wore them because it was fashionable. Their form was very various. Some account of them may be found in a learned work by Nicolai, On the Use of False Hair (*Ueber den Gebrauch der falchen Haare*). Modern refinement has abolished this unnatural ornament; and, where wigs are needed, care is taken to make them, as far as possible, resemble nature. Wigs, with all their appurtenances, form a very curious item in the history of fashion; and the tenacity with which men have clung, and even now cling, to this article, which, like the cravat, is neither comfortable, handsome, nor healthy, shows, in a striking manner, the force of habit. We allude, of course, only to those wigs which are worn merely for fashion's sake, and not to those imitations of the natural hair which serve as coverings for baldness. A history of wigs, with illustrative plates, would be not an uninteresting work. When people began to appear without wigs, it was considered the height of vulgarity. The same was the case when people left off hair-powder and queues. The French revolution gave the death-blow to the general use of wigs. The disuse of them in the case of particular classes was considered a flagrant breach of decorum. A clergyman in Prussia, named Shultze, was involved in serious difficulties, because he appeared with a queue and without a wig in the pulpit, and the government was obliged to protect him. Of Jovellanos it is mentioned that he was the first Spanish judge who appeared without a wig; and the influence of the prime minister, count Aranda, was required to support

him in this innovation, which, strange to say, has even yet not extended to the English judges, who, as well as the counsellors, still appear in wigs; and what wigs! Whoever has seen them will not be likely to forget them. It was considered a bold step in lord Brougham when he dared to appear with a smaller wig than his predecessors in the office of chancellor. A late English traveller (captain Basil Hall), among other melancholy instances of the universal ascendancy of the democratic principle in the United States, deplores the want of wigs on the heads of the judges. How must he have felt when the bishop of Carlisle appeared, in 1830, in the house of lords without a wig, and the bishop of Oxford followed his example.

WIGAN; a borough and market-town of England, in the county of Lancaster, situated near the small river Douglas, thirty miles south of Lancaster. It is a paved town, and has long been so, having obtained a patent for the purpose of having it done, being dated in the 7th of Edward III.; it is described by Leland in his Itinerary, as "a paved town as big as Warrington, but better builded." Many of the houses are old and ill-built, but two new streets have been recently formed, in which the houses are better. It is supplied with gas and water by joint stock companies, the act of parliament for the gas company having been obtained in 1823, and that for the water company in 1761. An act of parliament was obtained in 1720, under the authority of which the Douglas was made navigable to its junction with the Ribble. Ample canal communication is supplied by means of the Liverpool and Leeds canal, along which goods are sent, not only to these two places, but also, by means of their branches, to most parts of England. The principal manufactures are those of calico, fustians, and other cotton goods, linens, checks, &c., besides the spinning of cotton yarn to a great extent. There are also manufactories of edge-tools, brazen articles, spades, and other agricultural implements. In these many steam engines are employed. Coal is found to a considerable extent in the vicinity, and is sent along the canal to Manchester and other places. It returns two members to parliament. Population in 1821, 17,716; in 1831, 20,774; in 1841, 25,517.

WIGHT, Isle of; an island of England, on the coast of Hampshire, from which it is separated by a channel varying in breadth from two to seven miles. From the eastern to the western angle it measures nearly twenty-four miles, and from the northern to the southern about twelve. Its form is that of an irregular ellipsis, and it has been compared to the shape of a turbot. It contracts at its two extremities, and is very narrow towards the west. The entire circumference is generally set down at about sixty miles, and the island contains from 120,000 to 130,000 acres of land, of which a great portion is very productive. The high downs are excellent sheep-walks, and the farms are generally so contrived as to unite pasture with arable land. An old boast of the peasants is, that this beautiful island yields seven times as much as its inhabitants consume. At a very early time it exported a considerable quantity of wool. Through the middle of the island extends a range of high hills, affording commanding views over every part of the isle, with the ocean on the south side, and on the north the beautiful coast of Hampshire. The general characteristics of the scenery by land are gracefulness and fertility, the central range of downs, though at some points bold, not attaining to sublimity. It offers that blending pasture and pastoral life, with arable land, farming, and gardening, which is always so agreeable to the eye and imagination. In former times the isle was uncommonly rich in forest scenery, and although some of the woods have wholly disappeared to supply timber to the dock-yards of Portsmouth, and others have been much thinned, the country is still well sprinkled with trees. The almost invariable recurrence of fine woodland scenery, in connexion with glimpses of the sea, is a peculiar feature of the Isle of Wight. Water is not wanting. Besides the rivers Yar and Medina, which flow right across the island from south to north, and admit vessels with their snow-white sails far inland, among trees and hills, there are numerous streams and springs of less note scattered over the country. The land around the coast is in some parts very high, and frequented by immense numbers of marine birds, as puffins, razor-bills, will-cocks, gulls, cormorants, Cornish-choughs, daws, starlings and wild pigeons, some of which come, at stated times, to lay their eggs and breed, while others remain there all the year. The higher parts of the isle are composed of calcareous matter, of a chalky nature, incumbent on schistus. The limestone is burned for manure. Native alum is found in large quantities in Alum bay: pipe-clay is likewise very plentiful in different parts of the isle; and chalybeate springs have been found in different parts of the island. The trade of the Isle of Wight is flourishing; the harbour of Cowes is particularly convenient for shipping and unshipping merchandise. (See *Cowes*). The natural division of the island is very clearly marked; a centrical chain of hills and downs cuts it into two nearly equal parts, the one being north and the other south. The southern part, which is farther from the Hampshire coast, and much the more picturesque, bold, and secluded of the two, is commonly called the "back of the island." Another natural division into east and west is formed by the river Medina, which, rising at the foot of St Catherine's down, traverses the island, and falls into the Solent Strait at Cowes. The country to the east of the river, called East Medina, and that on the other side, called West Medina, are nearly equal in extent of territory. The whole of the island is politically subdivided into thirty parishes, fourteen of which are to the east of the river and sixteen to the west. The entire population of the Isle of Wight, as shown by the census of 1841, was 42,550 persons. Previously to the passing of the Reform Bill the isle returned six members to parliament; that is to say, two for the borough of Newport, two for Yarmouth, and two for Newtown; but since that great constitutional change, the Isle of Wight, being detached from Hampshire and becoming a county of itself, returns one member as such, and only two borough members for Newport, Yarmouth and Newtown being both disfranchised. Newport, which is now the capital, though Carisbrook enjoyed that honour in former times, contains a population of 6,330 persons, and is a place of considerable trade and activity.

WIGTON; a small royal burgh of Scotland, in Wigtonshire, pleasantly situated near the north side of the Bladenoch water, at its junction with the Cree or bay of Wigton, at the distance of 105 miles from Edinburgh, and fifty-eight from Dumfries. Population of the burgh and parish in 1841, 2,562.

WIGTONSHIRE · a county occupying the south-western extremity of Scotland, forming the western part of the ancient district of Galloway. It is bounded on the east by the stewartry of Kirkcudbright, or Eastern Galloway, also by Wigton bay; the Irish sea limits it on the south and west: and it has Ayrshire on the north. The shire extends between twenty-eight and twenty-nine miles from north to south, and between thirty and thirty-one miles from east to west. In this extent is comprehended the large bay of Luce, which indents it throughout an extent of fifteen miles on the southern side; and Loch Ryan, an arm of the sea, indents it on the northern side eight and a half miles. The bay of Luce, by so deeply indenting the land, forms two peninsulæ, and these projections have been long known by the Celtic name of *the Rhinns of Galloway*. The peninsula on the east receives the local name of *the Machers*. The superficial contents may be deemed about 309,760 statute acres.

The shire of Wigton rests upon a southern exposure: and its waters generally descend to the Irish sea. The climate is moist, with winds from the south-west, which prevail during the greatest part of the year, and usually bring with them rains; yet when proper attention is used by the agriculturist, the moisture of the climate is but seldom injurious to the products of the earth. Snows seldom lie long; and frosts are not usually severe, or of long endurance. This shire is one of the lowest districts in Scotland; and its diminutive hills are generally pretty free from the obtrusion of rocks. The best lands lie near the shore; the inland divisions being more elevated and largely mixed with heath and moss. The shire has no considerable rivers. The chief are the Cree, the Bladenoch, and the Tarf, with a few of smaller size. The greatest part of the soil of the district is of a hazel colour; and is of that species, which is sometimes termed a dry loam, though often it inclines to a gravelly nature. It principally lies upon a bed of *schistus*, and primary strata. In the northern part of the Rhinns, sandstone occurs. Quarries of slate have been found of different qualities. There is no coal, at least for any useful purpose; and although there is plenty of iron ore, it is of little value from the absence of coal. Lead mines were formerly wrought with the greatest success.

Wigtonshire comprehends seventeen parishes, and three royal burghs, Wigton, Whithorn, and Stranraer, with several thriving villages and burghs of barony, as Newton-Stewart, Garliestown, Glenluce, Port-Patrick, &c. It has a number of small seaports or natural harbours, chiefly in the western peninsula. It likewise possesses a number of splendid mansions, the seats of its nobility and gentry. In 1821, the population was 15,837 males, and 17,603 females; total 33,240: in 1841, 18,290 males, and 20,905 females; total 39,195.

WIGWAM; a name given by the English to the huts or cabins of the North American Indians. This word, as we learn from Eliot's Indian Grammar (printed in 1666), is a corruption of the Indian compound *wekuwom-ut*, which signifies, *in his house*. The corresponding word in the Delaware language is written by the German missionary Mr Zeisberger, *wikwam*.

WILBERFORCE, William, a distinguished philanthropist, whose exertions to procure the abolition of the slave-trade, give him a high rank among the benefactors of the human race, was born at Hull, in Yorkshire, 24th August, 1759, of which place his grandfather had been twice mayor. His father died when he was young, and, in 1774, he was sent to St John's college, Cumbridge, where he formed an intimacy with Mr Pitt. Mr Wilberforce came into a good fortune, and was elected member of parliament for Hull, in 1780. During this parliament, he did not take any very active part in politics. He was also elected in 1784, and, owing to the partiality of the people for Mr Pitt's friends, was also chosen for the county of York: he therefore made his election for that county. In 1787, he brought forward a motion for the abolition of the slave-trade, and presented a great number of petitions in favour of that measure. The minister spoke in favour of the abolition, but suffered the motion to be lost. The next year, Mr Wilberforce being ill, Mr Pitt brought on the motion, and the question was carried without a division; but it went no further. It was a singular circumstance, that Mr Pitt, whose power was then at its zenith, could carry every measure but this. Mr Wilberforce had much to contend with before he completed his object; and all he could do was to procure some regulations favourable to the slaves during their passage. The condition of the slaves in the West Indies was, however, greatly improved. While Mr Pitt was minister, every trick was tried to avoid the question, till Mr Fox and his friends succeeded to power, when, to their honour, he and his friends carried the measure. The influence of Mr Wilberforce in the house of commons was extraordinary; and, at one time, during the French war, an appearance of defection on the part of Wilberforce and his friends induced Pitt to open a treaty with France. In 1812, after having sat for Yorkshire in six parliaments, he withdrew from the representation; and, until 1825, when he retired from parliament, he sat for the borough of Bramber, as the nominee of his kinsman, lord Carrington. From the time of his retirement, he lived principally at Highwood Hill, a small estate near London. About 1831, heavy losses, sustained through the commercial disappointment of his eldest son, compelled him, with his wife, to seek an asylum in the parsonages of two of his sons, who were both in the church. He died on the 28th July, 1833, shortly after the government plan for the total abolition of slavery in the British colonies had passed in the house of Commons. His remains were interred in Westminster abbey, and his funeral was attended by distinguished men of all parties. In 1838, his memoirs were published by his sons, in 5 vols., 12mo., containing extracts from his diaries, journals, and letters. During his lifetime, Mr Wilberforce published a Practical View of the prevailing Religious Systems of Professed Christians in the higher and middle classes of the Country contrasted with real Christianity (1797); an Apology for the Christian Sabbath (1799); a Letter on the Abolition of the Slave-Trade (1807); and Substance of his Speeches on the bill for promoting the Religious Instruction of the Natives of British India (1813).

WILD RICE (*zizania aquatica*); a large kind of grass, which grows in shallow water or miry situations, in many parts of North America. The stem is seven or eight feet high; the leaves broad and scattering; and the flowers disposed in a large terminal panicle, spreading at the base and spiked at the summit. The female flowers are awned, upright, and form the terminating spike, while the male are nodding, and placed at the extremities of the spreading

branchlets; the stamens are six in number; the seeds are about half an inch long, slender, farinaceous, and afford a very good meal, which is much used by the Indians in those districts where the plant abounds. The seeds drop off with the slightest blow; and the Indians collect them by bending the plants, and beating them over their canoes. The wild rice grows in the Northern and Middle States, and in Canada. It is extremely abundant along the muddy shores of the Delaware, and forms the chief attraction for the immense flocks of reed-birds and black-birds which annually resort thither in the autumn. Owing to the different features of the Chesapeake and Hudson, it is rare on their shores, and on most of their branches. It is most abundant in the north-west, being found as far as latitude 51°, on lake Winnipeg; but it does not exist on the Missouri, or west of the St Peters, a branch of the Upper Mississippi. This plant, may, perhaps, at some future day, exert considerable influence on the destiny of the human race, and render populous many districts in the extreme north which are now considered uninhabitable. Another and larger species of *zizania* is found in the more southern parts of the United States, which is distinguished by having the male and female flowers intermixed.

WILHELMSHOHE (*William's Height*), formerly *Weissenstein*, and during the brief existence of the kingdom of Westphalia, called *Napoleon's Höhe*, is a castle belonging to the elector of Hesse-Cassel, a league distant from Cassel, the usual summer residence of the monarch. Art and nature have vied in adorning it. An alley of linden-trees leads from Cassel to the foot of the elevation on which the palace stands. The most remarkable objects in this place are, 1. The palace of the elector. 2. The great fountain, a column of water which may be made to rise 190 feet high. Its diameter is nine inches. 3. The great cascade. The water falls 104 feet, in a stream eighteen feet wide and one foot in thickness. 4. The Carlsberg (Charles mountain), with its cascades, erected, in 1701, by the Italian architect Giov. Franc. Guernieri. Here is a grotto, in front of which is a basin 220 feet in diameter. The water falls over the grotto into the basin, and thence in a triple cascade, 900 Rhenish feet long and 40 feet wide. At intervals of 150 feet are basins. On both sides of the cascade, 842 steps lead up to the palace, called, on account of its form, the *octagon*. At the foot of this building is a basin 150 feet in diameter, in which a rock, lying as if it had fallen from above, covers the body of the giant Enceladus. His mouth is seven feet wide, and sends forth a mass of water 55 feet high. In the back-ground of the basin is a grotto, on one side of which is a centaur, on the other a faun, both of which blow through copper horns as long as the water plays. There is also another basin, provided with a grotto and a statue of Polyphemus, which plays when the water flows. Before this grotto is the artichoke basin, owing its name to an enormous artichoke of stone, from the leaves of which twelve fountains spring, of which that in the centre rises forty feet. The giant castle (as the palace is called) is remarkable in various respects. It has 192 Tuscan columns, each 48 feet high, which support the third story. On a platform extending over the whole building, stands a pyramid 96 feet high, at the summit of which, on a pedestal eleven feet high, stands the colossal statue of the Farnese Hercules, called, by the people of the neighbourhood, the *great Christopher*. It is of copper, thirty-one feet high. In his club there is sufficient room for twelve men. There is a door in it, from which a splendid view is presented of the surrounding country. Among the other curiosities are a remarkable bridge, a romantic cascade, a Chinese village, &c.

WILKES, JOHN, a political character of temporary celebrity, born in London, in 1727, was the second son of an opulent distiller. After preliminary education, under a dissenting minister at Aylesbury, he was sent to finish his studies at the university of Leyden. He returned to England in 1749, with a considerable portion of classical and general knowledge, and soon after married a lady of large fortune. One daughter was the fruit of this union, which did not prevent him from living a licentious life; and he soon after finally separated from his wife. In 1757, he obtained a seat in parliament for the burgh of Aylesbury, and involved his affairs by the expenses of the election. He went into parliament under the auspices of earl Temple, through whose interest he was also appointed lieutenant-colonel of the Bucks militia. His early career was by no means conspicuous; but on the secession of earl Temple and Mr Pitt from the ministry, in 1762, he attained considerable reputation by some pamphlets attacking the administration, and more especially the earl of Bute. He extended his hostility not only to that nobleman, but to his country, and, by his paper entitled the North Briton, rendered antipathy to Scotland prevalent in England. These papers hastened the resignation of lord Bute, which took place in April 1763. In the same month appeared the famous No. 45 of the North Briton, which commented on the king's speech in such caustic terms, that a prosecution was determined upon. The home secretary, in consequence, issued a general warrant, or one in which particular names are not specified, ordering the apprehension of the authors, printers, and publishers of the paper in question. On this warrant Wilkes, among others, was apprehended; but he asserted the illegality of the warrant, and refusing to answer interrogatories, was committed to the Tower. Some days after, he was brought, by writ of habeas corpus, before chief justice Pratt, of the common pleas, who declared the judgment of that court that general warrants were illegal, and he was consequently discharged, amidst the general rejoicings of the populace. Aided by lord Temple, he brought actions against the secretary of state, under secretaries, messengers, and every person employed in the transaction, in which the prosecutors obtained damages, which were paid by the crown. Not content with this escape, he reprinted the obnoxious North Briton, which produced a regular prosecution to conviction; and, in the meantime, having fought a duel with a Mr Martin, in which he was dangerously wounded, he withdrew to France. The result of his non-appearance to meet the prosecution was expulsion from the house of commons. A second charge was also brought against him for printing an obscene poem, entitled an Essay on Women, and he was found guilty of blasphemy as well as libel, added to which, his continued absence, produced outlawry, and thus the ministerial triumph was complete. He in vain made attempts to procure the reversal of his outlawry; but trusting to his popularity, he ventured to return, on a change of ministry, and to deliver himself into custody. Notwithstanding his imprisonment, he was elected to represent the county of Middlesex, by a vast majority; and soon

after his outlawry was discussed at various hearings, and solemnly reversed; but this did not procure his liberty; and he was condemned to an imprisonment of twenty-two months, and a fine of £1000. In 1769, in consequence of a pamphlet written by him, in censure of a letter from the secretary of state to a magistrate, advising the employment of the military in repression of the riots which were the result of Mr Wilkes's confinement, he was again expelled the house. This measure being followed by his immediate re-election, he was declared incapable of becoming a member of the existing parliament, and colonel Luttrell set up against him, who was declared the sitting member for Middlesex at the next election, although the votes for him did not amount to a fourth part of those for Wilkes—a decision which produced a great sensation, and excited disgust even among those who disliked the person thus opposed. In return for the loss of his seat, he was elected alderman of the ward of Farringdon Without, and in this magistracy displayed his usual spirit against illegal authority. The house of commons having summoned some printers in the city before them, for publishing their speeches, they neglected to attend, when a royal proclamation was obtained for apprehending them; and when, on its authority, one of the printers was carried before alderman Wilkes, he, who deemed the apprehension a breach of the privileges of the city, discharged the printer, and ordered the captor to give bail. The lord-mayor Oliver, and alderman Crosby, acted the same way in regard to two other printers, for which, being members of the house of commons, they were committed to the Tower, while Wilkes being summoned to the bar of the house of commons, instead of obeying, wrote to the speaker, and claimed his seat. The house was now sensible of the difficulty in which it had involved itself, and found no better expedient to save its credit than an adjournment beyond the day on which he was ordered to attend. In 1772, he was chosen sheriff, and, in 1774, elected mayor; and he knew so well both how to acquire and to retain popularity, that, on the dissolution of parliament, in the same year, he was once more chosen member for Middlesex. In parliament he was a strenuous opposer of the measures which led to the American war, but did not render himself very conspicuous as a speaker. In 1779, he was chosen, by a great majority, chamberlain of London, which lucrative office, so necessary to his broken fortune, he held for the remainder of his life. In 1792, upon the dismissal of the North administration, the obnoxious resolutions against him were, on his own motion, expunged from the journals of the house; from which time, although, in 1784, once more re-elected member for Middlesex, he deemed himself "a fire burnt out." He died December 26, 1797, aged seventy; for some years previously to which event he was comparatively forgotten. Wilkes, as a writer and speaker, did not reach beyond mediocrity. His private character was very licentious, but he possessed elegant manners, fine taste, ready wit, and pleasing conversation. His Letters and Speeches were published by himself in 1787; and much light is thrown upon his conduct by the Letters from the Year 1774 to the Year 1796, to his Daughter (1804, 4 volumes 12mo.). His correspondence, in 5 volumes, was also published, with a Memoir by Almon, in 1805 (5 volumes.)

WILKIE, William, the author of an epic poem which obtained a temporary celebrity, was born in the county of Linlithgow, Scotland, on the 5th Oct., 1721. His father, a small farmer, contrived to give him a liberal education, and at the age of thirteen, he was sent to the university of Edinburgh. Before he completed his academical course, the death of his father obliged him to pay attention to the farm, which was the only inheritance of himself and three sisters. He still, however, prosecuted his studies, and was admitted a preacher in the church of Scotland. In 1753, he published his Epigoniad, an epic, which met with much success, especially in Scotland; and, in 1759, he was chosen professor of natural philosophy in the university of St Andrews. After settling in St Andrews, the poet purchased some acres of land, and resumed his farming occupations, in which he succeeded so well as to leave at his death property to the amount of £3000. Sometime after his appointment to the professorship, the university conferred on him, as a mark of its sense of his merits, the degree of doctor in divinity. In 1768, Dr Wilkie published a series of sixteen "Moral Fables, in Verse," 8vo.; but these, though sufficiently ingenious productions, did not advance him much farther in public favour as a poet. After a lingering indisposition, he died at St Andrews, on the 10th Oct. 1772, in the fifty-first year of his age.

WILKINS, John, bishop of Chester, a learned prelate of the seventeenth century, was born in 1614, and, after receiving the rudiments of a classical education at a private seminary in Oxford, was matriculated at New-inn hall in 1627, which he afterwards left for Magdalen hall. Having taken holy orders, he obtained the appointment of domestic chaplain to the count palatine of the Rhine. On the breaking out of the civil wars, his opinions and discourses manifested his adherence to the popular party, and his conduct was rewarded by the headship of Wadham college, Oxford, for which celibacy was a qualification. In 1656, he married the sister of Oliver Cromwell; and the protector gave his brother-in-law a dispensation, which prevented his losing his preferment. In 1659, he received the headship of Trinity college, Cambridge; but, on the restoration of monarchy in the following year, he was ejected. But, in 1668, he was elevated to the episcopal bench, through the interest of Buckingham. As a mathematician and a philosopher, Wilkins exhibited considerable acuteness and ingenuity. His opinions of the practicability of a passage to the moon, which he conceived to be inhabited, are expressed in his work entitled the Discovery of a New World, or a Discourse on the World in the Moon (8vo., 1638). In 1640, he published a second treatise, the object of which is to prove that the earth is a new planet. His other writings are, Mercury, or the Secret and Swift Messenger (1641); Mathematical Magic (1648); Ecclesiastes, or the Gift of Preaching; On the Principles and Duties of Natural Religion; a Discourse concerning Providence; an Essay towards a Real Character and Philosophical Language (folio), &c. He was one of the literary personages who received a charter of incorporation from Charles II., under the name of the *royal society*. Bishop Wilkins died in 1672.

WILL. The will of man is the power which gives direction to his faculties. What we call the *rational will*, is the volition operated on by external influences, directing it to the attainment of supposed good, or the avoidance of supposed evil. This will even brutes have, as they are capable of

seeking the agreeable and shunning the disagrecable; but of will in a higher sense, as influenced by the moral principle to seek what is good in itself, without reference to present pleasure or pain, brutes are not capable. Rational will presupposes liberty of choice. Moral liberty consists in the power of determining according to reason; but the will of man is never governed by a simple reference to the highest good: such purity of purpose can be ascribed only to the Deity. The freedom of the will is essential to moral action, and is the great distinction of man from the brute; yet it is not easy to reconcile it metaphysically with the influence of external things upon the mind, and with the foreknowledge of God. To determine how far the human will is free, and how far it is subjected to uncontrollable influences, has always been the great aim of the metaphysician and the moralist. But to give a proper view of a subject so profound, so unlimited, and so variously treated, would far exceed the limits which the character of this work prescribes.

WILL, OR TESTAMENT (*ultima voluntas*, last will). In the abstract, there is a contradiction in the idea of a will, because, whilst all the authority and obligation of a will is founded on the idea of a society, to which he who makes the will belongs, the person who claims the assistance of the society, has, in fact, ceased to belong to it, and all mutual obligations between him and the society have been dissolved by his death. It cannot be denied that there is something unphilosophical in the idea that a being, no longer a member of a society, shall nevertheless influence it by his previous will. But, on the other hand, the reasons in support of the right of making wills are so numerous, that it is sanctioned by the laws of all civilized nations, and even receives additional security with the progress of civilization. Our limits do not permit us to go into the discussion of these reasons. We will only remark that it is generally admitted that the disposition to acquire property, and the secure possession of it when acquired, are the foundation and safeguards of civilization; and this disposition to acquire, and the feeling of complete ownership, are greatly promoted by the liberty to dispose freely of acquired property, even after death.

The idea of a will does not exist among nations in their earliest stages. They admit the right of making testaments with reluctance, and under great restrictions, and render the execution of the right difficult, by surrounding it with formalities, which indicate that such a disposition takes place only with the consent of the society, and is valid only under its authority. In Rome, this right was extended, by the twelve tables, to every father of a family (*pater familias uti legassit super pecunia tutelave rei suæ, ita jus esto*); but the earliest form of making wills was to declare one's own will in the assemblies of the people (*calatis comitiis*), or in the presence of the soldiers, who were collected for a military expedition (*in procinctu*). Among the ancient Germans, the right of disposing by will was granted only to free persons sufficiently vigorous to appear "without support, without a staff," (*ungehabt und ungestabt*), and the right could be exercised only in the assembly of the people. Restrictions additional to those which proceed from a general incapacity to perform a valid act, have always attended the right of making a will: thus, in Rome, foreigners were not allowed to bequeath their property (this restriction was preserved in the *droit d'aubaine* in France until the revolution): in Germany, none but free persons had this right, and even they could not dispose of inherited estates. Such limitations have been gradually abolished in modern times: still, however, in favour of children, parents, grand-parents, &c., many are yet continued in various parts of Europe; for instance, testators are not allowed to bequeath the whole of their property away from their natural heirs. Persons of full age, sound mind, reputable deportment, and capable of making known their intentions, are generally allowed to make a will. Of course, the testator cannot dispose of any thing of which he has not the full property, such as fiefs, entailed estates, &c.

In the Roman law, the doctrine of wills and testaments was intimately connected with the earliest foundations of their national law, with their religion by the *sacra privata*, with the ancient rights of their *gentes*, with their views of the complete property of a citizen (*dominium ex jure Quiritium*) and of mere possession (*quod in bonis est*), with their system of slavery, and their public law. Hence this doctrine is so interwoven with their whole law, and is marked by so many peculiarities; for instance, that a testament must always embrace the whole property left (*nemo pro parte testatus, pro parte intestatus decedere potest*), which has been abolished in the modern codes (Prussian Code i, xii, 256; Austrian Civil Code i, 556). The Roman law has, notwithstanding all these peculiarities, become general in modern Europe, and has found its way even to England (as testaments there come within the jurisdiction of the ecclesiastical courts), where it still exists with some modifications. In Germany, too, the Roman law is yet the law of the land, wherever it has not been expressly changed, and there it has retained the most of its peculiarities. In Germany, however, all foreigners are capable of bequeathing and inheriting, by a law made as early as the time of the emperor Frederic II. (See *Aubaine, Droit d'*.) This is not the place to treat a subject so extensive in all its details. We can only give the most important features. The form of testaments required by the Roman law still bears the stamp of its origin. The fundamental idea is that of a solemn and public transfer of the whole property, by which another person enters into all the transferable rights and obligations of the testator. This was to be done before seven witnesses, expressly summoned (Roman male citizens, against whom there was no legal objection), and the whole ceremony was to be performed without interruption. Five of these were proper witnesses: the sixth (*libripens*) originally carried a balance, to denote the weighing out of the estate to the heir, who was considered as a purchaser; the seventh (*antestatus*) is considered by Hugo as the foreman of the witnesses. In their presence the testator made known his will, either merely orally (*testamentum nuncupativum*), or by showing them a writing in his own hand, or at least signed by himself, declaring it to be his testament, which was then also to be signed and sealed by all the witnesses (*testamentum scriptum*). If the testator was a blind person, an eighth witness was necessary, and also if he could not write, but only in case he made a written instrument. The want of these external formalities made a will void (*injustum*), so that it lost its whole effect. The internal formalities included, in general, the institution of heirs, particularly if the testator had children

or grand-children, or, in failure of them, relations in the ascending line, in which case it was necessary for him to make them his heirs, or to disinherit them explicitly. The entire omission to name such relations in the will, made it void (*testamentum nullum*), and the subsequent birth of a legal heir was equivalent to a revocation of the will (*testamentum raptum*). A testament passing over heirs entitled by law to a share (and such heirs included, besides children and parents, also sisters and brothers) was called inofficious (*inofficiosum*), and their legal portion might be claimed by such heirs. When the testator lost the right of bequeathing, the testament became invalid (*irritum*), as well as when the appointed heir ceased to be such, for some reason, and no one was substituted in his place (*testamentum destitutum*). Even in earlier times, the external formalities were dispensed with in particular kinds of wills (*testamenta privilegiata*), particularly, 1. the testaments of soldiers, which were almost entirely relieved from them, as well as from the internal formalities; 2. testaments made in the country, which required but five witnesses; 3. testaments made in times of contagious and epidemic diseases, or during a dangerous sickness, in which case the interruption of the ceremony did not make the will invalid; 4. testaments of travellers: also when parents left their property to their children only, no other formality was necessary than that they should write the will themselves, and mention the names of the children, and the date of the instrument: these were private testaments. In the times of the emperors, in whom the whole authority of the state was concentrated, a testament required no external formality but that of being delivered in person to the monarch; in fact, it was sufficient to deliver it to the officers of justice, and have it entered in the public records.

Modern legislation has changed much in these forms, though, generally speaking, they are yet required in most countries of Germany. In the middle ages, the ecclesiastical courts, almost every where, claimed the oversight of testaments, as, even now, testaments in England fall within the jurisdiction of these courts, because it was maintained that the future state of the soul of the testator was connected with the character of the testament, which therefore fell within the province of the church, and that every one was bound to make some bequest for pious purposes, for the salvation of his soul. The formalities connected with the making of testaments were lessened, and it was declared to be sufficient that they should be put in writing in presence of the parish priest and two witnesses; and legacies for the benefit of the church were relieved from all formalities. This rule of making a testament in the presence of the clergyman, is no longer the common law of Germany; but it has been retained as the local law of many places. The Roman regulations respecting judicial testaments have also been modified in Germany. In Saxony, a testament is judicial if it is drawn up in court by the judge and the clerk, or out of court by the judge, the clerk and an assessor (*Schöppe*), or is handed to them. The presence of the judge may be supplied by that of a second assessor. In other parts of Germany, a testament may be drawn up by a member of the town council and its clerk. But private testaments made according to the Roman form are also valid. In Prussia, judicial testaments are the only ones allowed. The testator either appears in court, and there deposits his will in writing, and, if he so pleases, sealed; or he declares his will orally, and it is taken down in writing; or he invites a deputation of the court to his house. In Austria, both judicial and extra-judicial testaments are valid. At the making of the former, at least two persons belonging to the court, and acting under oath, must be present; and, if the testator gives in his testament in writing, it must be signed by himself. A last will is also valid, *a.* if it is written entirely by the testator's own hand, and signed with his name; *b.* if it is written by another person, but signed by the testator, and acknowledged before three witnesses; or, *c.* if it is read before three witnesses: or, *d.* only orally declared. These last forms will probably be changed at some future period, as affording too much facility for forgery. In France, there are but two forms of testaments, the written testament, when the testator writes the will entirely himself, signs it, and affixes the date to it (*testament holographe*), and the public testament, when the testator declares his will orally, and signs the protocol before two notaries and two witnesses, or one notary and four witnesses. If the testator cannot write, this circumstance must be mentioned. the testator may also deposit with the notary a sealed instrument (*testament mystique*). In this case, six witnesses must be present at the declaration that the paper contains the will of the depositor. So great a variety of forms existing in various countries, it may become of great importance to know by what laws the validity of a will is to be judged. In general, the laws of the testator's native country must be followed; so that a Prussian or a Frenchman can make a testament in foreign countries only in the way prescribed by the laws of his own country. But in respect to the form of public acknowledgment, the laws of the country must decide; for example, a Frenchman in foreign countries may resort to the courts instead of notaries; and, if a Prussian should make a will in France, he must apply to the notaries to give validity to the instrument. The testament, according to the Roman law, is always revocable; and no person can legally divest himself of this privilege of change. The Romans did not admit of a man's binding himself to leave his property to a particular person. In Germany, however, an irrevocable right of inheritance can be obtained by contract, and the obligation is often made mutual, as in matrimonial contracts. Except in such cases, the testator can always change his testament, by taking back the instrument deposited in court, cancelling a private testament, or making another. But on this point, also, laws differ. According to the common law of Germany, the taking back of the deposited will is not a revocation of it, unless the intention of the testator is clearly manifested; for example, by tearing off the seals. The same is the case in Saxony. But in Prussia the taking back of a testament deposited in court, makes it void. A later testament has preference over an earlier one; but, if there are several testaments, and it cannot be ascertained which is the latest, both are valid; and, if the later testament was invalid from the beginning, the earlier one remains in force. No regularly-made testament can be annulled by a mere oral declaration; but the Roman law provides, that if a testament is ten years old (in which case it became void by the earlier law), it may be revoked by a declaration before three witnesses. Modern laws require for such oral annulment, unaccompanied by the act of erasure, tearing off seals, &c., the

same formalities which were required to give validity to the instrument. In France, a will may be revoked by a written expression of the testator's purpose, and also by an oral declaration before one notary and two witnesses. Different from the testament in which the institution of an heir is required, is the codicil, which may contain only legacies; hence it is customary to add to testaments the clause, that if, from any circumstance, they cannot take effect as testaments, they shall, nevertheless, be considered as codicils (*clausula codicillaria*).

We shall now consider the laws of England on the subject of wills. In respect to personal property, a will is also called a *testament;* and the disposition of the testator's real or personal estate, or both, is called a *last will and testament.* A *devise* is the disposition of real property in a will, and a *legacy* is the personal property disposed of to one or more persons by a testamentary provision. A *bequest* is a provision of a will disposing of real or personal estate. Among the Anglo-Saxons, the practice of devising lands prevailed to some extent (Spelman *On Feuds,* c. v.; Wright's *Tenures,* p. 171); but, after the conquest, lands held by feudal tenure were not devisable, with the exception of burgage tenures. Lands held in gavel-kind, however, as it were, for the most part, those of the county of Kent, were devisable. After some changes in the laws, in this respect, in England, a statute was passed, in the beginning of the reign of Charles II., which gave a general power of devising whatever interest or estate the testator had in lands.

By the law of Scotland the transmission of land is regulated entirely on feudal principles. Landed property is conveyed to an heir in the form of a *disposition* or gift, not a bequeathment; and the law requires that the words "I give, grant, and dispose," be used, instead of the words "I will, and bequeath." We are sorry we have not room here to explain the reason of this nice distinction. The Scottish law, also, from its jealousy of the weakness of mankind, while under sickness, and of the importunity of friends in that conjuncture, has declared, that all deeds affecting heritage, if they be granted by a person on deathbed, to the damage of the heir, are ineffectual. When a person has been in bad health at the time of executing a settlement, by going to kirk or market unsupported, or by surviving the execution of the deed for sixty days, the objection of death-bed can be taken off.

*Persons capable of making a Will.* The capacity to make a will, as to make a contract, or do any other act that may affect the person or rights of a party, is subject to legal regulation. To make a valid will the testator must be of sound mind; and to make a devise of lands, he must be of the age of twenty-one years; but by the English law, a boy of fourteen, and a girl of twelve, may bequeath chattels. In England, a married woman cannot dispose of either real or personal estates by will. Devises to corporations, except for charitable uses, are not authorised by the English law. Though in England a person may dispose by will of his property, both real and personal, yet, in respect to real estate, the general doctrine has been, that a devise will operate only on the property of which the testator was possessed, at the time of making the will, and of which he continued in possession till his death. This construction often defeats the intention of the testator, who, by devising all his real estate, generally intends to devise what he may own at the time of his decease. And the provision is often, professedly, a disposition of all the lands of which he may be in possession, at the time of his decease.

*Execution of a Will.* It is a general rule that wills, to operate on lands, must be executed according to the laws of the place where the lands lie; but personal property passes by a will executed according to the laws of the place of residence of the testator, though the property be situated elsewhere. This distinction arises from the general rule, that the title to lands is to be governed by the laws of the country where it is situated, but that personal property is subject to the contracts and disposition made by the owner, in conformity to the laws of the place where they are made. It is a general rule, with some few exceptions, that a will must be in writing. In England it is only requisite that it should be signed. The construction put upon this rule in England has been that the testator's writing his name in the beginning of the will is a signing. Three witnesses are required in England, and these do not require to sign in each other's presence.

*Revocation.* A will may be revoked by an instrument of equal formality, or by cancelling. A subsequent will, accordingly, is a revocation of a prior one, if its provisions imply a substitution of the latter will for the former. But the more general rule is, that if a subsequent will is invalid, it will not be a revocation of a preceding one; and the general rule again is, that by a revocation or cancelling of a subsequent will, a preceding one is revived. A will may be revoked by legal operation or inference; as in England, by subsequent marriage, and birth of a child, unless the wife and child or children be provided for by a marriage settlement. So the will of an unmarried woman is revoked by her marriage. A *codicil* is a supplementary will, and requires to be made with similar formality.

*Construction.* It is a general rule, that wills are to be construed liberally, and, as far as is practicable, so as to fulfil the intention of the testator. In this respect, a greater liberality is adopted than in regard to deeds and most other written instruments. Thus the law does not require that a devise should be to the devisee *and his heirs,* in order to carry a fee; any other words, or any provisions of the will, showing an intention to give all the testator's title, being sufficient for that purpose. But it has been held that, in general, the devise of a piece of land gives the devisee only a life estate, unless it could be gathered from the will that a greater estate was intended to be devised. The rule that the presumption shall be in favour of a life estate, if no other be expressed, has defeated the intention of testators in thousands of instances, indeed, in almost all cases of wills not drawn up by lawyers.

WILLAMOV, JOHN THEOPHILUS, a German dithyrambic poet, was born in 1736, at Mohrungen, in Prussia, and, in 1767, became a school-master in St Petersburg. He died in 1777. His poems relate to the separation of Sicily from Italy, the history of Arminius, and other elevated subjects. He also wrote fables in dialogue. The most complete edition of his poems was published at Vienna (1793).

WILLDENOW, CHARLES LOUIS, a celebrated botanist, born at Berlin, in 1765, was the son of an apothecary, and, after studying pharmacy under his father, was sent to the university of Halle, and then to Langensalza, where Wiegleb had a laboratory of pharmaceutical chemistry. Willdenow then returned to Berlin, where, in 1798, he received the

chair of natural history at the royal college of medicine and surgery. In 1801, he was appointed professor of botany to the academy of Berlin, and, at length, director of the botanic garden at Berlin, which received great additions and improvements under his management. He formed a zoological cabinet, which he presented to the museum of Berlin. In 1804, he travelled through Austria and Upper Italy, and, seven years after, was invited to Paris by Humboldt, to classify and describe the multitude of new plants brought by that traveller from America. Willdenow died not long after his return to Berlin, July 10, 1812. He was an associate of twenty-four learned societies; and the king bestowed on him the order of the black eagle. Among his principal works are, *Prodromus Floræ Berolinensis* (1787); *Historia Amaranthorum* (Zürich, 1790, folio); *Elémens de Botanique* (1792), which has been translated into several languages; *Arboriculture Berlinoise spontanée* (1796); *Species Plantarum exhibentes Plantas ritè cognitas ad Genera relatas cum Differentiis specificis, Nominibus trivialibus, synonymis, selectis Locis natalibus, secundum Systema sexuale digestas* (Berlin, 1797—1810, 5 vols., in nine parts); *Guide pour étudier soi-même la Botanique* (1804); and *Hortus Berolinensis*, of which only the first volume has been published. Willdenow's great work, the *Species Plantarum*, was left incomplete, as he did not live to finish the history of the cryptogamic plants. A continuation has been promised by professor Link, of Berlin.

WILLE, John George, a distinguished engraver, was born in 1715, near Giessen, in Hesse-Darmstadt. He learned the trade of a gunsmith, and afterwards became a watch-maker. He subsequently went to Paris, and there became an engraver. His portrait of marshal Belleisle became the foundation of his fortune. In the revolution, he lost his property, amounting to 800,000 francs, and would have lost his life had not his son happened to be general of the national guard of Paris. Napoleon made him a member of the legion of honour, and the institute elected him into their body. His portraits of the minister Florentin and of Bossuet are particularly valued. He subsequently engraved historical and similar pictures; also many sketches of his son *Peter Alexander Wille*, born in Paris, in 1748. He died in 1808.

WILLIAM I., surnamed the *Conqueror;* king of England and duke of Normandy. He was born in 1024, and was the natural son of Robert, duke of Normandy, by Arlotta, the daughter of a tanner of Falaise. His father, having no legitimate son, on his departure on a pilgrimage to Jerusalem, caused the states of the duchy to swear allegiance to him as his heir. Robert died in 1035, on his return from Palestine; and the guardian of the young duke could not prevent the king of France from reducing the duchy to a very low condition. When William assumed the reins himself, his vigour and ability soon repelled these aggressions, and reduced both the French king and his own rebellious barons to the necessity of peace and submission. Edward the Confessor, at this time king of England, being closely connected with the Norman family, was instigated by the archbishop of Canterbury, a Norman, to allow William to be given to understand that the king designed him for his successor. The irresolute character of Edward, however, induced him to keep the secret in his own breast, which enabled Harold to ascend the throne on his death, in 1066, without opposition. Harold had previously been carried a captive into Normandy, where he was treated with great distinction by William, who informed him of the intentions of the Confessor, and took from him an oath to do his utmost to carry them into effect. His occupation of the throne led to immediate war, and the Norman invasion followed, which was rendered successful by the battle of Hastings, fought on the fourth of October, 1066, terminating in the defeat and death of Harold and two of his brothers. On the Christmas-day of the same year, William was crowned, after a sort of tumultuary election on the part of the English nobles, and took the customary coronation oath. His first measures were mild: he sought to ingratiate himself with his new subjects, preserved his army in strict discipline, confirmed the liberties of London and other cities, and administered justice impartially. On his return to Normandy, however, the English, being treated by the Norman leaders like a conquered people, broke out into revolt, and a conspiracy was planned for the massacre of all the Normans in the country. On this intelligence, William returned, and began with a show of justice, by repressing the encroachment of his followers; but, reviving the tax of Danegelt, which had been abolished by Edward the Confessor, the discontents were renewed. These he repressed with his usual vigour, and a temporary calm succeeded. The resistance of two powerful Saxon nobles, Edwin and Morcar, who had formed an alliance with the kings of Scotland and Denmark, and with the prince of North Wales, soon after drew William to the north, where he obliged Malcolm, king of Scotland, to do homage for Cumberland. From this time he treated the English like a conquered people, multiplied confiscations in every quarter, and forced the native nobility to desert the country in great numbers. In 1069, another formidable insurrection broke out in the north, and, at the same time, the English resumed arms in the eastern and southern counties. William first opposed the storm in the north, and executed such merciless vengeance in his progress, that the whole country between York and Durham was turned into a desert; and above 100,000 of both sexes, and all ages, are said to have perished. There being now scarcely a landed proprietor who had not incurred the forfeiture of rebellion, he put into execution his plan of introducing a total alteration of the state of English law and property, by dividing all the lands into baronies, and adopting the feudal constitution of Normandy in regard to tenure and services. He also reduced the ecclesiastical property to a similar system, and, in order to prevent resistance from the clergy, expelled all the English church dignitaries, and placed Normans or other foreigners in their stead. Still further to subjugate the minds of the English, he sought to abolish even their language, causing the French to be spoken at court, and used in courts of justice and in law proceedings, and ordering it to form a leading part of instruction in all the schools throughout the realm. In 1071, the earls Edwin and Morcar produced a new insurrection in the north, which terminated in the death of the former and capture of the latter; and the Scottish king having again aided them, William marched an army into Scotland, which soon led to a peace; on which occasion, he allowed the return of the weak but rightful Saxon heir, Edgar Etheling, who had taken refuge in Scotland, and promised him an honourable establishment. In 1073, he returned to Normandy, whence he was

recalled by a revolt among his Norman barons, which was, however, quelled by the regent Odo, his half brother. In 1076, he received a letter from pope Gregory VII., requiring him to do homage for his kingdom, and to pay the accustomed tribute from England to the holy see. William denied the homage: nor would he allow the English prelates to attend a general council summoned by Gregory, but consented to the levy of Peter's pence. About the year 1081, he instituted that general survey of the landed property of the kingdom, the record of which still exists under the title of *Domesday Book*, being a minute return of the estates in the different counties, their extent, proprietors, tenure, condition, and value. The manner in which he laid waste the New Forest in Hampshire, where he demolished villages, churches, and convents, and expelled the inhabitants for thirty miles round, merely to form a forest for hunting, exhibits his cruelty and love of sporting, which he further protected by a most severe code of game laws. In 1087, he went to war with France, whose king had encouraged a rebellion of Norman nobles. He entered the French territory, and committed great ravages, but, by the starting of his horse, received an injury which hastened his death, at the abbey of St Gervais, near Rouen (1087), in the sixty-third year of his age. He left three sons—Robert, to whom he bequeathed Normandy; William, who inherited England; and Henry, who received but his mother's property. He also left five daughters. William the Conqueror was the most powerful sovereign of his time. He possessed superior talents, both political and martial, and employed them with remarkable vigour and industry. His passions were, however, strong; his ambition severe and merciless; and his love of sway often led him to disregard all restraints of justice and humanity.—See Thierry's *Histoire de la Conquête de l'Angleterre par les Normands* (Paris, 1825, 3 vols.)

WILLIAM II., surnamed *Rufus*, from his red hair, second son of the preceding, was born in 1060. Being nominated king of England by his father, on the death of the latter, he hastened over from Normandy, took possession of the royal treasury at Winchester, and was crowned at Westminster in September, 1087. The division of England and Normandy did not, however, please the great barons, who possessed territories in both; and a conspiracy was formed for effecting the deposition of William in favour of his brother Robert. As the conspirators were chiefly Normans, the king, who possessed a considerable share of his father's vigour and activity, immediately turned his attention to the English, and, by promising a restoration of their ancient laws, and liberty to hunt in the royal forest, he was enabled to levy a force, by means of which he successively reduced the castles of the confederates, whom he sent to Normandy, after confiscating all their English possessions. Being now firmly seated on his throne, he forgot his promises to the English; and the death of Lanfranc, archbishop of Canterbury, freeing him from an authority which he respected, he extended his rapacity to the church, and seized the temporalities of vacant bishopries and abbeys, to which he delayed appointing successors. In 1090, he made an incursion into Normandy, to retaliate on his brother Robert; but a reconciliation was effected between them, and Robert accompanied him back to England, and led an army for him against the king of Scotland, whom he compelled to do homage to William. The two brothers did not, however, long continue friends, and, in 1095, William was in France plotting against Robert, when he was recalled to England by a conspiracy of his barons in the north, which he quickly repressed. The following year, Robert mortgaged his dukedom to William, for the sum of ten thousand marks, to enable him to fit out an expedition and join the crusaders in the Holy Land. William accordingly took possession of Normandy and Maine, and soon after, being seized with a dangerous illness, appointed Anselm, a Norman abbot, distinguished for learning and piety, to the archbishopric of Canterbury, which had remained vacant since the death of Lanfranc. Contrary to his expectation, he found in Anselm a strenuous defender of the claims of the church, and strove to depose him by means of a synod, but could not succeed. At length Anselm obtained permission to visit Rome; and in his absence the king immediately seized on all the temporalities of his see. He soon after was obliged to visit France, to resist the progress of the lord of La Fleche. In 1100, the duke of Guienne, following the example of the duke of Normandy, applied to William to advance him money on his province, to which the latter readily agreed, and was about to pay the money and acquire possession of the territories, when an accident terminated his life. He was hunting in the New Forest, and had alighted from his horse after a chase, when, a stag suddenly starting up near him, a French gentleman, named Walter Tyrrel, let fly an arrow at the animal, which, glancing from a tree, entered the king's breast, and pierced him to the heart. Tyrrel immediately galloped to the coast, and embarked for France, where he joined the crusaders. The king's body was found by the country people, and interred, without ceremony, at Winchester. This event took place August 2, 1100, when William was in the fortieth year of his age, and thirteenth of his reign. This prince possessed vigour, decision, and policy, but was violent, perfidious, and rapacious.

WILLIAM III., hereditary stadtholder of Holland and king of England, the greatest enemy of Louis XIV., and the founder of the system of the balance of power in Europe, became prince of Orange by the death of his father, William II. of Nassau. He was born in 1650. His mother was Henrietta Mary Stuart, daughter of the unfortunate Charles I. Possessing superior talents, and educated in an excellent manner by the celebrated De Witt, he gained the love of the people, who appointed him captain-general of the union in 1672, when Louis XIV. invaded the republic, and conferred on him the office of stadtholder, which had been discontinued four years before. He caused the dikes to be broken down, deceived the French generals by a skilful manœuvre, formed a junction with the imperial army, and forced the French to retreat. The party of the house of Orange now prevailed; and the states of Holland, together with four provinces, declared, Feb. 2, 1674, the stadtholdership hereditary in the house of Orange. William lost, indeed, the battle of Senef, in 1674, and that of St Omer, in 1677; but he was, nevertheless, able to keep the enemy in check, and, by his policy, engaged the empire, Spain and Brandenburg to take part with Holland, so that a peace was brought about at Nimeguen, in 1678. He could not, however, prevent the conclusion of separate treaties. William's whole policy was directed against Louis XIV. for whom he enter-

tained a personal hatred. To curb the ambition of the French monarch, he instituted the league of Augsburg, July 29, 1686, between the emperor, Spain, Sweden and Holland, to which Denmark, and some German princes, also acceded. Perhaps he may have had the further object of giving effect to his plans with respect to England. His wife, Mary (married in 1677), was the daughter of James II., and presumptive heiress to the throne. Unexpectedly, James's second wife gave birth to a son, June 10, 1688. The greater part of the parliament and of the nation now feared that the bigoted James would introduce the Catholic religion, and subvert the constitution. Rumour also asserted that the prince was supposititious. The Episcopalians and Presbyterians in England, under these circumstances, united, in order, by the aid of Holland, to give Mary the succession to the throne. William foresaw that England, by the policy of his father-in-law, would become more and more closely connected with France: he therefore joined with the great majority of the British nation; and the pensionary Fagel persuaded the states-general to support him with ships and troops for the preservation of British freedom and the Protestant religion. William arrived suddenly at Torbay, Nov. 5, 1688, with a fleet of 500 sail, ostensibly equipped against France, and with 14,000 troops. Upon his landing, a great part of the nobility immediately declared for him; and James's soldiers, by degrees, went over to him; so, too, did Churchill, afterwards Marlborough, who was followed even by the second daughter of James, Anne, with her husband prince George of Denmark. The overtures of the king were rejected: he therefore fled with his family to France, in December, after which William made his entry into London. The two houses of parliament, in convention, now declared that James II. had broken the fundamental compact between the king and the people, and had consequently forfeited the throne. After this (Feb. 13, 1689), Mary was proclaimed queen, and William, her husband, who had, meanwhile, gone over to the English church, was proclaimed king, and was alone to conduct the administration. At the same time, the declaration or bill of rights (see *Bill of Rights*) settled the limits of the royal power, and the order of succession. This is called the revolution of 1688. Scotland followed England's example; but in Ireland, whither Louis XIV. sent James with an army, the majority of the Catholics maintained the cause of the deposed king. But the victory gained by William over the army of James on the Boyne, July 1, 1690, and by his general Ginkel at Aghrim, July 13, 1691, assisted by the clemency with which he treated the vanquished party, made him master of Ireland. William was wounded in the former battle; but he caused the wound to be dressed at the head of his troops, and fought on horseback till the battle was won. In the war on the continent he was less successful. At Steinkirk he was defeated by marshal Luxembourg, in 1692, and at Neerwinden by the same general, in 1693; but he always succeeded in wresting from the French the fruits of their victories by skilful retreats and marches. He even took Namur, in 1693, in the sight of a superior hostile army. Louis was finally compelled to acknowledge him as king of England, at the peace of Ryswick, in 1697. The parliament insisted, at that time, on the disbanding of nearly the whole army, because it deemed a standing army incompatible with the security of the constitution. Soon after, the will of Charles II. of Spain, who had made the grandson of Louis XIV. his heir, induced William to arm all Europe against Louis in the great alliance of the Hague, Sept. 7, 1701. For the benefit of Austria, and to preserve the balance of power, but more especially because he could not brook that Belgium should be dependent on the policy of France, he wished the Spanish monarchy to be divided, and for this purpose repaired to Holland, at the end of June, 1701. Though his lungs, at this time, were so weak that he could not speak loud, and he felt that his end was approaching, he made all preparations, with his usual sagacity, for the opening of the campaign. After the death of James II. Louis XIV. having caused his son, James III. to be proclaimed king of England, William found it easy to induce England to accede to an alliance with Holland, the emperor, Denmark and Sweden, and to consent to the equipment of 40,000 soldiers and 4000 sailors. But in the midst of these projects, he broke his collar-bone by a fall from his horse, between Kensington and Hampton court, March 8, 1702, and died, in consequence of the accident, March 16, aged fifty-two years. (His wife, Mary, had already died childless, in 1695.) With him the hereditary stadtholdership of the five provinces became extinct, and the Orange possessions were divided between Prussia and William's nearest cousin and testamentary heir, John Will. Friso, the prince of Nassau-Dietz, hereditary stadtholder of Friesland and stadtholder of Gröningen, from whom the present king of Holland is descended. William's manners were too cold and ungracious to allow him to be popular with the British. Under a reserved exterior he concealed a strong love of renown and power. His chagrin, when he was compelled to disband his Dutch guards, and the regiments of French fugitives in his pay, was so great, that he was on the point of resigning the government, and was prevented with difficulty by his friends and ministers. The British continental policy, a consequence of jealousy towards France, was founded by William; but he founded, at the same time, the subsidy, or loan system, and the national debt. To obtain the majority of votes in parliament, he made use of bribery. Otherwise he reigned in the spirit of freedom and tolerant Protestantism, and agreeably to the true interest of the nation, which had been wholly disregarded by the Stuarts. The whigs were, therefore, now the ministerial party, and the house of commons from this time acquired new political importance. In the Netherlands, William founded a school of great statesmen, like Fagel and Heinsius. Immersed in politics and war, he had neither leisure nor inclination for literature and art. In conversation, he was grave and repulsive; but in business, penetrating, quick and decided; in danger, undaunted; in difficulties, unshaken; in war, bold without ostentation. Though of a weak constitution, he feared no hardships. Much as he loved fame, he hated flattery and pomp. See *James II.*, *Marlborough*, and *Britain*.

WILLIAM IV., king of the united kingdom of Great Britain and Ireland, was the third son of George III., and born August 21, 1765. He ascended the throne on the death of his brother, George IV., June 26, 1830. Previous to his elevation to the royal dignity, he was known by the title of the duke of Clarence. Being appointed lord high admiral, during the short administration of Canning, who, deserted by a large part of the tory party, had been obliged to cast about for support

in every quarter, the duke of Clarence was censured for expenditures made without waiting for parliamentary appropriations, and had found it advisable to resign his office during the Wellington administration (1828.) On his accession to the throne, he retained the ministers who were in office at the decease of his predecessor (the Wellington cabinet), with assurances of his confidence in their zeal and ability. Opposition, disappointed in their expectations of a change of ministry, founded on the whig family connexions formed by several of the Fitzclarences (natural children of the duke of Clarence by Mrs Jordan), and partly on the character and previous political course of the king, now renewed their attacks on the ministry with additional vigour. In the new parliament, which met in November, the ministry being left in a minority on a motion of Sir H. Parnell for referring the civil list to a select committee (15), immediately sent in their resignation; and a whig administration was formed on the twenty-second, with earl Grey at its head. The great event which will render the reign of William IV. memorable, is the passage of the reform act. William IV. died on the 20th June, 1837, and was succeeded by his niece, Victoria. He was affable in his manners, cordial in his deportment, with somewhat of the rude heartiness of the deck, on which he had passed some of his early years. In the navy he had, of course, been under the command of plebeians, and the messmate and companion of simple commoners. This had given him more knowledge of the common classes than his brother and predecessor had had an opportunity of acquiring, and, although he had never distinguished himself in the navy, something of popular manners, and a command of sea-phrases. William IV. married in July, 1818, Adelaide, sister of the duke of Saxe-Meiningen, hy whom he had no surviving children. He had, however, a large family by Mrs Jordan, the celebrated actress, who was for many years his mistress, while duke of Clarence. This lady he seems to have unaccountably abandoned at the last, for she died in obscurity, in France, in 1816. As a miserable set-off to his conduct in this matter, on his accession, he ordered Chantrey to prepare a statue, to be placed over her remains, in the cemetery of St Cloud. The eldest son of the king, hy Mrs Jordan, George Fitzclarence, was created earl of Munster in 1831; a second, lord Adolphus Fitzclarence, is captain in the royal navy; a third, lord Frederic Fitzclarence, colonel in the army; and a fourth, queen's chaplain. The earl of Munster is author of an Account of the British Campaign of 1809, in Spain and Portugal (London, 1831, 2d vol., of Memoirs of the Late War). The five daughters of Mrs Jordan are married to the earl of Errol, the honourable J. E. Kennedy (son of carl Cassilis), Mr Sidney, colonel Fox (son of lord Holland), and lord Falkland.

WILLIAM I. THE YOUNGER, count of Nassau, prince of Orange, the founder of Dutch freedom, was the eldest son of William the Elder, count of Nassau, and Juliana, countess of Stolberg, and was born April 16, 1533, at the castle of Dillenburg, in the county of Nassau. He was educated in the Roman Catholic faith, by Maria, queen of Hungary, sister of Charles V. and spent nine years in attendance on the person of the emperor, who had so high an esteem for the spirit, the prudence and intelligence of the prince, that he asked his opinion respecting the most important matters, and, when he was but twenty-two years old, intrusted him with the chief command of the army in the Netherlands, in the absence of Philibert, duke of Savoy. He also recommended him to his successor, Philip II., who, however, deceived by the calumnies of the Spaniards, regarded him as the cause of the resistance of the Netherlands, and, therefore, would not confer on him the office of stadtholder. As cardinal Granvella had now the entire confidence of the king, and Margaret of Parma, who was charged with the government of the Netherlands, was obliged to do whatever this proud and ambitious prelate suggested, especially with respect to the introduction of the detested Spanish inquisition, and the erection of new bishoprics, the count of Egmont, the prince of Orange, and the count of Horn, therefore, represented to the king, in writing, that unless the cardinal was speedily recalled, his violence would drive the country to rebellion. Philip looked on this step as treason; but he concealed his anger, and recalled the cardinal, but, on the other hand, sent the duke of Alva, with Spanish and Italian soldiers, to the Netherlands. After the remonstrance, offered, in 1566, by three hundred noblemen, with count Louis of Nassau, the brother of William, at their head, against the introduction of the inquisition and the establishment of new bishopries, had been rejected with contempt (the petitioners were styled beggars —*Gueux*), William had a meeting with Egmont, Horn, his brother Louis, and others, at Dendermond, to deliberate on the means of averting the threatening danger. The majority advised an armed resistance. Count Egmont alone, governor of Flanders and Artois, was of opinion that they should trust to the grace and clemency of the king. "This grace," replied the sagacious Orange, "will be our destruction, and Egmont the bridge by which the Spaniards will pass into the Netherlands, and which they will then destroy." When they separated, Egmont and Orange, in presentiment of the future, embraced, and took leave of each other with tears. The prince, with his wife and his children, excepting the eldest, who was studying at Louvain, repaired to Breda, whence, however, he returned to his castle at Dillenburg. Meanwhile, Alva advanced into the Netherlands. Many men of consequence, including Egmont and Horn, were immediately arrested, and executed at Brussels, June 5, 1568. When cardinal Granvella was apprized of this at Rome, he inquired whether Alva had taken Secrecy (so he termed the prince of Orange.) "If this fish is not caught, the duke's fishing is good for nothing." Alva caused the prince, the counts of Hoogstraten, of Kuilenburg, and others, who had retired from the country, to he summoned before the council of twelve. The prince did not appear, but sent in an appeal to the states of Brabant, as his natural judges, and to the king in person, because, as a knight of the Golden Fleece, he could he judged only hy the king in person, and by the knights of the order. He applied for protection to the emperor Maximilian II. and the German princes. The emperor promised it to him, and condemned the proceedings of Alva, who had declared the prince outlawed for not appearing in person on the appointed day, had confiscated his property, stationed troops in his city of Breda, and removed his son Philip William, then thirteen years of age, from the university of Louvain, and sent him as a hostage to Spain.* The prince of Orange now

* He was eventually released, and died in 1618.

took the field against Alva. He publicly professed the Protestant religion, and received aid in money and troops from several Protestant princes. With the army, which he had raised, his brothers Louis and Adolphus invaded Friesland. At first, they defeated, at Heiligerlee, in Gröningen, the Spanish general, John of Ligne, count of Aremberg, who fell in the engagement; but Adolphus also lost his life; and, as count Louis wanted money to pay his troops, he was soon after beaten by Alva at Jemmingen, July 21, 1568. William now raised a new army of 24,000 Germans, who were joined by 4000 French soldiers, and declared publicly that Alva and his council of blood (*conseil des troubles*), in Brussels, were the cause of the war. He conducted his forces, with great skill, across the Rhine and Meuse, entered Brabant, and defeated a division of the hostile army, but was unable to bring the duke of Alva, who threw himself into the fortresses, to an engagement, or to excite the people, who trembled before the Spaniards, to a general insurrection: on the contrary, he was obliged to sell his plate and baggage, and even pledge his principality of Orange to pay his arrears to his officers and soldiers. His army now dispersed. He himself, with 1200 cavalry, and his brothers, repaired to the duke of Deux Ponts, and took part in his expedition to France, against the Catholic party of the Guises. In this expedition, he distinguished himself in several battles and sieges, but, after the unhappy termination of the campaign, returned to Germany. In France, admiral Coligny had advised him to fit out privateers against the Spanish, and establish himself particularly in Zealand and Holland, from which the Spaniards would hardly be able to drive him. The prince followed this advice, and the privateers made themselves masters, in 1572, of the town and harbour of Briel, on the island of Voorn, and also took Flushing. As Alva's tyranny became more intolerable, and the people were exasperated by new exactions, several cities of Holland, Zealand, Overyssel and Gueldres publicly declared for the prince of Orange. To relieve his brother Louis, besieged by Alva at Bergen, in Hainault, he entered Brabant with 17,000 men, where Mechlin and Louvaid threw open their gates to him; but the French auxiliaries, sent him by Coligny, were defeated, and he himself could not compel Alva, who had stationed his forces in an entrenched camp, to an engagement. He therefore retired, not without loss, to the Rhine, and narrowly escaped the danger of being captured by 1000 Spaniards, who broke by night into his camp. A little dog waked him in time to assemble his soldiers, and cut off the retreat of the enemy. He next proceeded to Utrecht and Zealand, where the Dutch privateers had appointed him their admiral. In 1575, the states of Holland conferred on him the sovereignty and chief command, for the time that the war with Spain should last; and the example was followed by Zealand, and afterwards by Utrecht, Gueldres and Overyssel. This trust was renewed in 1581. Some days before they openly announced their defection from Spain, the states did homage to the prince as their sovereign, and took the oath of allegiance. This sovereignty, however, was merely personal; but, in 1582, the grant of the hereditary dignity of the old counts of Holland, to which was annexed the possession of their domains, was made him by the states, and formally accepted. The prince was deserving of this confidence. He had already, in 1573, equipped a fleet of 150 sail at Flushing. This fleet was always superior to the Spanish, so that it may be truly said, that the Dutch achieved their freedom on the ocean. After Alva and the prince had each taken several cities, Louis of Zuniga and Requesens succeeded the duke in 1573, and, April 14, 1574, defeated Louis and Henry of Nassau, the brothers of the prince, who both fell on the field of battle. William raised the siege of Leyden by breaking down the dikes. Zuniga soon after died; but the Spanish soldiers at Antwerp and other places committed such outrages, that all the provinces of the Low Countries, excepting Luxemburg, united at Ghent, in 1576, to expel the foreign troops, and relieve themselves from religious restraints; and when the new stadtholder, John of Austria, a natural brother of the king, violated the privileges granted them by the edict of 1577, the states of Antwerp called the prince of Orange to their aid. The people received him with acclamations in Brussels, where a part of the estates offered him the stadtholdership. But as several nobles were opposed to him, he effected the adoption of a resolution that Matthew of Austria should be received as stadtholder, while he himself should have the rank of lieutenant-general; but he retained the management of all public business. Meanwhile, by the victory at Gemblours, January 31, 1578, the Spaniards recovered their superiority in the Walloon provinces, which were zealously Catholic. The new stadtholder, Alexander Farnese of Parma, appointed by the king after the sudden death of John, was a politic general, who knew how to win the favour of the Belgians, dissatisfied with the religious peace, or the political equality of the two churches, and converted to the Spanish interest the nobles, who were disaffected towards the prince of Orange. The prince, therefore, brought the seven northern provinces into closer connexion, by the union of Utrecht, January 23, 1579, and thus laid the foundation of the republic of the United Netherlands. The negotiations for peace at Cologne having been fruitless, the states, at the proposal of the prince, conferred the sovereignty, in 1580, on Francis, duke of Anjou, brother of King Henry III. of France, and on July 26, 1581, renounced their allegiance to king Philip of Spain, as a tyrant. The king had already declared the prince of Orange outlawed, as a "heretic and false Christian, another Cain and Judas, a committer of sacrilege, a perjurer, an instigator of the disturbances in the Netherlands, and a real pest of human society," and had set a price of 250,000 dollars on his head. Whoever should deliver him, living or dead, into the hands of the Spaniards, was to receive a pardon for all crimes, and, with his posterity, he raised to the rank of nobility. The estates, in consequence, gave their stadtholder a body-guard, and the prince replied in a violent manifesto, in which he accused the king of lust and murder, of the death of his son don Carlos, and of his wife Elizabeth. Meanwhile, the duke of Parma took several fortified places, but was obliged to raise the siege of Cambray, when the duke of Anjou advanced with an army. The French prince was hereupon proclaimed duke of Brabant, March, 1682, on which occasion the prince of Orange presented him the ducal coronet, and publicly administered the oath, that he would reign agreeably to the tenor of the compact. This event took place in Antwerp, where an attempt was soon after made to assassinate the prince. A Spaniard, named Jaureguy, shot him with a pistol: the ball entered under the right ear,

and passed out through his left cheek, destroying several of his teeth. The perpetrator was cut down on the spot by the guard. A Spaniard, Salzedo, and an Italian, Francis Baza, were likewise apprehended, who had received money from the duke of Parma to make way with the duke of Anjou and the prince of Orange. Both were convicted: one was torn to pieces by four horses, at Paris; the other put an end to his own life. After these occurrences, the duke of Anjou began to aim at unlimited power, heedless of the advice of the prince of Orange. But his design of making himself master by force of the most important cities, such as Bruges and Antwerp, was frustrated by the citizens; and he returned to France, January 3, 1583, where he died the same year. July 10, 1584, the prince of Orange was shot in his palace, at Delft, by a young Burgundian, named Balthasar Gerard, who had insinuated himself into his confidence. He was rising from table, when the assassin fired a pistol at him, containing three balls. He fell, and died with the words, "*Mon Dieu! Mon Dieu! Ayez pitié de moi et de ton pauvre peuple!*" His murderer was not more than twenty-two years old. On his examination, he confessed that a Franciscan of Tournai, and a Jesuit of Treves, had persuaded him to commit the deed by the assurance that it would secure his eternal happiness. William was fifty-two years old, was well formed, had chestnut hair, and a brownish complexion. He spoke little; but what he said was judicious and pleasing. In the art of winning the good-will of men, he was a master. Towards his people, his demeanour was friendly and discreet. He frequently went in the streets with his hat off, and conversed freely with the citizens. In his house, he was hospitable, a lover of splendour, and liberal of every thing but his confidence. His acute understanding penetrated the character of men and events: but he himself was impenetrable. Reserved in his manners, and apparently even timid, when he spoke, the fire and boldness of his eloquence carried along the minds of all. Danger he met with calm equanimity, obstacles with a wise firmness. He was not anxious for his own exaltation, but for the interest of the people: the freedom, therefore, which he established did not perish with him, and his name has acquired a permanent place in the history of Europe. He was four times married. His son Maurice, who succeeded him in the office of stadtholder, was one of the greatest captains of his age. His other son, Frederic Henry, succeeded Maurice, and died in 1647. William III., king of England, was grandson of Frederic. There are three lives of William, in Dutch, by anonymous authors. See, also, *Meursii Guglielmus Auriacus*, etc. (Amsterdam, 1638, fol.) and Kluit's *History of the Dutch Government*.

WILLIAM I., elector of Hesse, was born in Cassel, in 1743, during the reign of his grandfather. His father Frederic II. ascended the throne in 1760. Having become a Roman Catholic in 1754, the education of the children was left, according to agreement, entirely with his wife, who also received the government of the county of Hanau as the guardian of the children. Prince William studied at the university of Göttingen. During the seven years' war, he lived at the court of Christian VII., whose second sister he married in 1764. When of age, he took the government of the county of Hanau out of the hands of his mother. The young prince was active, economical, just, and popular. In 1776, he concluded, as did several other German princes, a treaty with England, to furnish troops to be employed against her colonies in North America, then at war with the mother country. Two years later, he was made a major general by Frederic the Great of Prussia, and took part in the war of the Bavarian succession. In 1785, he became sovereign of all the Hessian territories, after the death of his father. He now showed himself severe, active, and just; but his disposition for saving often degenerated into avarice, whilst his mania for soldiers became a curse to his country. He ruled independently, and closely watched the officers of his government, often protecting the peasants, whom he considered as his property, against them. He improved the schools and churches, the police, and the administration of justice. In 1787, he concluded another treaty with England, agreeing to furnish 12,000 men, in consideration of receiving for their service, 675,000 crown-dollars annually. He also marched troops against France when the revolution broke out. The peace of Basle, concluded August 28, 1795, between Prussia and France, put an end to his exertions in this war. By the peace of Luneville, William received the dignity of elector, and an indemnification for the territory that he had lost, taken chiefly from the possessions of the elector of Mayence. He took the greatest care of the increase of his private treasure. His known disposition towards France, his relations with Prussia, (he being a field-marshal in her service, and his eldest son having married, in 1797, the sister of Frederic William III. of Prussia), and his continual military preparations, drew upon him the misfortunes which befel him after the battles of Jena and Auerstädt. In consequence of the threats of Napoleon, and the advance of French troops under Mortier and the king of Holland, he fled to the neutral states of the king of Denmark, saving only his family and his treasures. By the peace of Tilsit and the foundation of his kingdom of Westphalia, William I. was deprived of all his dominions, and lived, from July, 1808, in Prague. In 1809, when Austria took arms against France, the exiled elector issued a proclamation to his former subjects, and began to collect an army near Eger, in Bohemia, with which he thought to recover his electorate; but the issue of the war put an end to his undertaking. The victory of the allied powers at Leipsic, in 1813, improved his condition. In November, 1813, he entered his former capital, the city of Cassel. Though seventy years old, he resumed the labours of government with great activity, but not to the benefit of his people. His ideas of monarchical power were entirely at variance with the spirit of the times. Every thing was to be put on the old footing: 20,000 men (with *queues*, like the soldiers of former times), soon marched to join the allies, but were allowed to return even before the peace of Paris, on condition that they should be kept ready for immediate service. The elector, however, did not comply with this condition, from motives of economy, and became thereby involved in difficulties with the allies, who marched troops into his country. By the mediation of Prussia, this difficulty was adjusted. In 1815, the elector sent 15,000 men to act against France; they fought at Sedan, Charlesville, Mezières, &c. His wish to see the German empire restored by the congress of Vienna was as fruitless as his plan to have himself acknowledged

king of the Catti, so that he retained his former title of elector; and, having received several additions to his territory, he called himself also grand duke of Fulda and prince of Isenburg. He would not acknowledge the validity of the sale of the crown domains, which had been made under Jerome, and took them away from the buyers. This fact, the crying injustice of which was admitted by Prussia and Austria, is mentioned in the article *Domain*. The assemblies of the estates, to which he had added the estate of peasants, gave him much trouble, as the ground assumed by them did not agree with his antiquated notions of the rights of the crown. Towards his officers he was avaricious and severe. His soldiers received little pay and much drilling and flogging. He refused to separate the public treasury from his enormous private accumulations. His conduct towards individuals who had been in office under the Westphalian government was unprincipled. On the other hand, he must be admitted to have been careful to prevent his officers from abusing their authority. He was accessible to his subjects, and protected justice when it did not clash with his interests, or unless he had formed wrong notions of what was right. He died in 1820, and was succeeded by his only son, the elector William II.

WILLIAM I. (William Frederick of Orange), king of the Netherlands and grand duke of Luxemburg, was born Aug. 24, 1772. His father, William V., prince of Orange and Nassau, hereditary stadtholder, who died in 1806, at Brunswick, was descended from John, the youngest brother of the great William I. of Orange; his mother was a princess of Prussia. In 1788, he made a tour in Germany, and remained for some time in Berlin, at the court of his uncle, king Frederick William II. In 1790, he entered the university of Leyden. In 1791, he married the Prussian princess Frederica Louisa Wilhelmina, sister of the present king of Prussia. He then undertook many improvements in the army, but suffered much opposition from the patriots, who had been put down, in 1787, by Prussian troops. Part of them had fled to France; and the national convention declared war against the stadtholder, Feb. 1, 1793. Dumouriez conquered Dutch Brabant; but the prince, the subject of this article, delivered it, by the aid of the troops of the allies, after the victory at Neerwinden, March 18, gained by prince Coburg, in the Austrian service, over Dumouriez. The crown prince now prevented the French from entering Western Flanders. But, September 13, he was attacked in his position between Menin and Werwick, with such superior force that he was obliged to retreat behind the Scheldt, after a long resistance, in which his brother, prince Frederick, was wounded. The next year, he took Landrecies. He then forced the enemy to retire behind the Sambre; but, in the great battle on June 26, in which he had been successful at the head of the right wing, he was obliged to retreat, after the French had taken Charleroi by assault, and beaten the left wing at Fleurus. The Austrian forces having retreated, before Pichegru and Jourdan, behind the Meuse, the prince, with his enfeebled army, could only protect the frontiers of the republic, in unison with the duke of York. But the fortresses were reduced, and the ice enabled the enemy to pass the Waal, so that Pichegru entered Utrecht, Jan. 17, 1795. The party of the patriots favoured the enemy, and the stadtholder soon found himself incapable of saving the republic, forsaken by her allies. His sons, therefore, gave up their commands, Jan. 16, and William V. embarked, on the 18th and 19th, with his family, at Scheveningen, in nineteen poor fishing vessels, for England. Hampton court was assigned as a residence to the exiled family; but the two sons soon returned to the continent, in order to arm a body of Dutch emigrants at the expense of England, which body, however, after the peace of Basle, was again dissolved. Prince Frederic entered the Austrian service, and died at Padua, in 1799. The subject of this article went with his family to Berlin, where he expected a favourable change from the influence of Prussia, then on friendly terms with France. He occupied himself with the education of his children, the cultivation of science, and the improvement of some estates which he had bought in Poland, and on which he immediately abolished bondage. His father had ceded to him the places which the diet had assigned him in Germany by way of indemnification, namely, Fulda, Corvey, Dortmund, &c., August 29, 1802, and he took possession of them in the same year. He lived at Fulda, but spent part of the winter in Berlin. Living himself in the most economical manner, he established in his new possessions an economical administration, and reformed numerous abuses. His impartial treatment of all his subjects, of whatever religion, gained him the hearts of all. After the death of his father, he took possession of the lands of Nassau belonging to his family. But, having refused to become a member of the confederacy of the Rhine, he lost the sovereignty over the lands of Orange, which were divided between his relations of Nassau-Usingen and Nassau-Weilburg, and Murat, grand duke of Berg He was also threatened with the loss of Fulda if he should continue to decline joining the confederation; but in case he should join, he was to be rewarded by the grant of Würtzburg. But he declared that he would not dishonour the name of Orange by bending his neck to a foreign master. In August, 1806, he went to Berlin, where, as commander of a Prussian regiment and lieutenant-general, he subsequently received the command of a part of the right wing of the Prussian army between Magdeburg and Erfurt. After the battle of Jena, he was obliged to follow field-marshal Möllendorf to Erfurt, and became a prisoner when Möllendorf capitulated. He was, however, permitted to live with his wife in Prussia. But Napoleon declared him, the elector of Hessia, and the duke of Brunswick, to have forfeited their dominions: and Fulda took the oath of allegiance to the emperor, October 27. Corvey, Dortmund and the county of Spiegelberg, were given, in 1807, to the kingdom of Westphalia and the grand-duchy of Berg. His domains, even those reserved to him by the act of confederation, were taken by Berg and Würtemberg; but Bavaria did not follow their example, and the other princes promised to pay him the surplus revenue of the lands. He had gone in the meantime, to Dantzic, whence he proceeded to Pillau. In the peace of Tilsit, he was not mentioned. He retained only his possessions in the duchy of Warsaw, and again lived privately in Berlin, where his eldest son was educated in the military academy. When Austria was engaged in war with France, in 1809, the unfortunate prince joined the army of the archduke Charles, and fought at the battle of Wagram. He then returned to Berlin. In the meantime, particularly, however, after the battle of Leipsic, influ-

ential men in the Netherlands were labouring to prepare the way for the restoration of the house of Orange. William Frederic was then in England, in order to concert, with the British government, measures to support the Dutch. After the battle of Leipsic, the victorious armies approached the frontiers of Holland; the people rose in Amsterdam, Nov. 15 and 16; and even the Hague, in the midst of French troops, declared itself, on the 17th, for the prince. When the prince received the news of these movements, he embarked, and landed, Nov. 29, at Scheveningen. The people received him with demonstrations of joy. In Amsterdam, the commissioners of the provisionary government issued, Dec. 1, the proclamation, "The Netherlands are free!" and "William I. is the sovereign prince of this free country," without being authorised to do so by the nation. The prince yielded reluctantly, and declared that a constitution should be established to secure the liberties of the people. Twenty-three fortified places were yet in the hands of the enemy, who were encamped near Utrecht. But the allies soon drove them from the country. William Frederic hastened the arming of the people, and charged a committee to draw up a constitution, which was adopted, March 29, 1814, by the representatives of the people, and then sworn to by the monarch. He had also again taken possession of his German hereditary possessions, towards the end of 1813. After this the congress of Vienna united Belgium and Liege with the Netherlands, to form a kingdom; and the prince was proclaimed king of the Netherlands, prince of Liege and duke of Luxemburg, under the name of William I., on March 16, 1815, at the Hague. He and his Dutch subjects were both dissatisfied with this arrangement, apprehending that the Dutch commerce would suffer by this union with the manufacturing state of Belgium: the difference of language and religion also presented great obstacles; but England wished to retain possession of several of the former Dutch colonies, and Belgium was given in exchange for them. The king was also obliged to cede to Prussia his hereditary possessions in Germany in exchange for Luxemburg. Since that time, William I. has ruled with great integrity and firmness, as even his enemies have admitted, except in the fiercest heat of party struggles. The king has conscientiously and often scrupulously adhered to the constitution. Justice was always a predominant trait in his character. A committee was charged in 1815, with the drawing up of a general code for the Netherlands. It ended its labours in 1819. June 21, 1816, William became a member of the holy alliance. In 1814, he founded the William order of military merit, and, in 1815, the order of the Belgiac lion for civil merit. He resided before the late revolution, alternately at the Hague and in Brussels; lives simply, is very industrious, and accessible to all: and though the majority of the Dutch were anti-Orange, and, therefore, anti-monarchical, he is popular with them, particularly since 1830. See the article *Belgium*.

WILLIAM, Fort, a fortress in the West Highlands, in the shire of Inverness, situated on the east side of Lochiel, and the south side of the small river Nevis, where it falls into that inlet of the sea, at the distance of sixty-one miles south-west of Inverness, and twenty-nine and a half south-west of Fort Augustus. It is of a triangular form, with two bastions mounting fifteen twelve-pounders. The fort was originally built during the usurpation of Cromwell, by general Monk, and occupied much more ground at that time than it does at present, accommodating no fewer than 2000 men. It was then named "the garrison of Inverlochy," from the ancient castle of that name in the neighbourhood. In the time of William III., it was rebuilt on a smaller scale, with stone and lime instead of earth, and received its name in honour of that monarch. In the year 1745, it stood successfully a siege of five weeks, but it is by no means a place of strength. It is now garrisoned by a governor, fort-major, and a company of soldiers.

WILLIAMS, Helen Maria; a distinguished writer on history and general literature, was born in the north of England, in 1762. She went to London at the age of eighteen, and was introduced to the literary world by doctor Andrew Kippis. The first production of her pen appears to have been a legendary tale, in verse, entitled Edwin and Eltruda (1782); and this was followed by an Ode on Peace (1783); Peru, a poem (1784), and a Collection of Miscellaneous Poems (1786, 2 vols., 8vo.). In 1788, she published a poem On the Slave-Trade; and, the same year, she visited France, where she formed many literary and political connexions. In 1790, she went again to France, and settled at Paris; and soon after appeared her Letters written from France, in the Summer of 1790, of which she published a continuation in 1792. The object of these, and of some contemporary productions of this lady, was to recommend the doctrines of the Girondists; and, consequently, on their fall, under the tyranny of Robespierre, she incurred great danger, and, being arrested, was for some time a prisoner in the Temple at Paris. On obtaining her freedom, she renewed her application to literary pursuits. Besides many works of minor importance, she engaged in an English translation of the Personal Narrative of the Travels of Humboldt and Bonpland in America (1814—1821, 6 vols., 8vo.). Miss Williams died at Paris, in December, 1827. In addition to the works already mentioned, she wrote Julia, a novel (2 vols.); a Narrative of Events in France, in 1815; Letters on the Events which passed in France since the Restoration in 1815; and other pieces; and she was at one time a contributor to the New Annual Register.

WILLIAMS, Roger, was born of reputable parents in Wales, in 1598. He was educated at the university of Oxford, was regularly admitted to orders in the church of England, and preached for some time as a minister of that church; but embracing the doctrines of the Puritans, he rendered himself obnoxious to the laws against non-conformists, and embarked for America, where he arrived, with his wife, in February 1631. In April following, he was called by the church of Salem, as teaching elder, under their then pastor Mr Skelton. This proceeding gave offence to the governor and assistants of the Massachusetts bay, and, in a short time, he removed to Plymouth, and was engaged as assistant to Mr Ralph Smith, the pastor of the church at that place. Here he remained until he found that his views of religious toleration and strict non-conformity gave offence to some of his hearers, when he returned again to Salem, and was settled there after Mr Skelton's death, in 1634. While here, and while at Plymouth, he maintained the character he had acquired in England—that of "a godly man and zealous preacher." He appears, however, to have been viewed by the government of that colony with jealousy, from his first entrance into it. He

publicly preached against the patent from the king, under which they held their lands, on the ground that the king could not dispose of the lands of the natives without their consent. He reprobated the "calling of *natural* men to the exercise of those holy ordinances of prayers, oaths, &c."; but what rendered him most obnoxious, undoubtedly, was his insisting that the magistrate had no right to punish for breaches of the first table, or, in other words, "to deal in matters of conscience and religion." These causes, conspiring with others of less importance, finally occasioned a decree of banishment against him, in the autumn of 1635, and he was ordered to depart the jurisdiction in six weeks, but was subsequently permitted to remain until spring, on condition that he did not attempt to draw any other to his opinions; but "the people being much taken with the apprehension of his godliness," in January following, the governor and assistants sent an officer to apprehend him, and carry him on board a vessel then lying at Nantasket, bound to England; but before the officer arrived, he had removed, and gone to Rehoboth. Being informed by governor Winslow, of Plymouth, that he was then within the bounds of the Plymouth patent, in the spring he crossed the river, and commenced the settlement of Providence. He afterwards embraced some of the leading opinions of the Baptists, and, in March, 1639, was baptized by immersion, at Providence, by Ezekiel Holliman, whom he afterwards baptized. He formed a society of this order, and continued preaching to them for several months, and then separated from them, doubting, it is said, the validity of all baptism, because a direct succession could not be traced from the apostles to the officiating ministers. In 1643, Williams went to England, as agent for the colonies at Providence, Rhode Island, and Warwick, to solicit a charter of incorporation, which he finally procured, and returned in September, 1644. In 1651, serious difficulties having been raised in the colony, by Coddington's procuring a charter, which gave him almost unlimited authority over the islands of Narragansett bay, Williams and Clarke were despatched agents of the colony to procure a revocation of it. This they effected in October, 1652. Williams returned in 1654; but Clarke remained in England, and procured a second charter in 1663. He was several times, both before and after this period, elected to the office of president or governor of this colony. He died in April, 1683, at Providence. Very few incidents in his life are to be collected from his writings; and the prejudices of contemporary, and even later historians, who have mentioned him, render it difficult to form a true estimate of his character. He appears to have been a man of unblemished moral character, and of ardent piety, unyielding in opinions which he conceived to be right, and not to be diverted from what he believed to be duty, either by threats or flattery. After he was banished, though he conceived himself to be an injured man, he gave his persecutors information of the Indian plot, which would have destroyed their whole settlement, and concluded treaties for them, which insured their peace. He is accused, and not unjustly, of frequent changes in his religious sentiments; but these changes should be ascribed to conviction, for they militated against his worldly interest. He was at all times the undaunted champion of religious freedom; and, strange as it may seem, this was probably the first thing that excited the prejudices of the Massachusetts and Plymouth rulers against him. He was accused of carrying this favourite doctrine so far as to exempt from punishment any criminal who pleaded conscience; but this he expressly denied. Of the publications of Williams that have reached us, the first, in order of time, is his Key into the Language of America, republished in 1827. This, it would seem, was composed during his voyage to England, in 1643, and was printed at London soon after his arrival. It preceded Eliot's works on the same subject. Very few copies of the original edition are now extant. The one belonging to the Massachusetts historical society is the only one known to be in America. His next work was his Bloody Tenent, written in answer to Cotton's treatise, which upheld the right and enforced the duty of the civil magistrate to regulate the doctrines of the church. This called forth a reply from Cotton, entitled the Bloody Tenent Washed and made White in the Blood of the Lambe; and this was followed by a rejoinder from Williams, entitled the Bloody Tenent yet more Bloody, by Mr Cotton's Endeavour to Wash it White. In these works of Williams, the doctrine of religious liberty and unlimited toleration are illustrated in strong language, and supported by stronger arguments—arguments that preceded those of Locke, Bayle and Furneau. In 1672, Williams had a controversy with the Quakers. He maintained a public dispute with them at Newport and at Providence, in August, 1672, and afterwards published his George Foxe digged out of his Burrowes, in answer to a work of Fox. This is a rare book.

WILLIAMSBURG; the seat of justice for James City county, Virginia, twelve miles west of Yorktown; population about 1500. It was formerly the metropolis of the state, but has greatly declined. The college of William and Mary was founded here in 1693, in the time of king William, who gave it an endowment of £2000 and 20,000 acres of land, together with a revenue of a penny a pound on tobacco exported to the plantations from Virginia and Maryland. To these, other endowments were added; and the whole annual income of the college was formerly estimated at £3000. The income has greatly diminished, and its accommodations are poor.

WILLIAMSON, Hugh, was born December of 1735, in Chester county, Pennsylvania, and graduated at the college of Philadelphia, May 17, 1757. He early showed much fondness for mathematics. He studied theology, and was licensed to preach; but the infirm state of his health induced him to relinquish the pulpit, and to turn his attention to the study of medicine. From 1760 to 1763, he was professor of mathematics in the college of Philadelphia. In 1764, he went to Edinburgh to pursue his medical studies. He next proceeded to London, where he studied twelve months, and then repaired to the university of Utrecht. After his return to Philadelphia, he practised for some years with much success, but, at length, gave up the profession on account of the weak state of his health, and remained a number of years devoted to literary and philosophical pursuits. In 1769, he was appointed by the American philosophical society a member of the committee to observe the transit of Venus and Mercury over the sun's disk, which occurred in that year. The results of the observations made by him are contained in the first volume of the Transactions of the society. In 1773, he was appointed, in conjunction with doctor Ewing, to make a tour

through England, Scotland and Ireland, to solicit benefactions for the academy of Newark, in Delaware; but, owing to the irritation subsisting at the time against the colonies, they were not very successful. He returned to America in 1777. In 1787, he was one of the delegates from North Carolina to the convention at Philadelphia that framed the federal constitution, of which he was a decided advocate. In 1811, he published, in one volume, 8vo., his Observations on the Climate in different Parts of America, compared with the Climate in corresponding Parts of the other Continent, and exposed the futility of the assertion that America is a country in which the frigid temperature and vice of the climate prevent the growth and expansion of animal and vegetable nature, and cause the degeneration of man and beast. In 1812, appeared his History of North Carolina (2 vols., 8vo.)—a valuable addition to the annals of the American continent. His death occurred suddenly, May 22, 1819, in the eighty-fifth year of his age.

WILLOW (*salix*). The species of willow are very numerous, and most of them are confined to the more northern parts of the globe. They are trees or shrubs, with alternate and usually lanceolate leaves, and inconspicuous flowers, which are diœcious, and disposed in aments. Most of them grow in moist situations, and are constant attendants along the margins of streams and water-courses. This genus is considered the most difficult to understand of the whole vegetable world, as the male and female flowers are situated upon different plants, appear before the expansion of the leaves, and soil, situation, and climate, produce a very considerable change in their appearance. The bark of some willows is employed for tanning, and sometimes, from its bitter and astringent properties, is given, in intermittent fevers, as a substitute for cinchona. The long pliant branches of the osiers are used for the fabrication of baskets, and other agricultural implements; and they are cultivated pretty extensively for these purposes.

The weeping willow (*S. Babylonica*), so generally admired for its long, pendent branches, grows wild in Persia, and, besides, has long been a favourite ornamental tree in China. Almost all the willows are of the easiest propagation and culture. Care should be taken, however, with most of them, that the soil is not absolutely bog or marsh.

WILMOT. See *Rochester*.

WILNA (*Wilno*); a city of Russia, capital of the government of Wilna, formerly capital of Lithuania, on the Wilia, 170 miles east of Königsberg, 350 south-south-west of Petersburg; lon. 25° 17′ east; lat. 54° 41′ north; population in 1826, 25,000, Jews 5000; see of a Greek archbishop and of a Catholic bishop. It has thirty-five Roman Catholic churches and convents. It is situated in a hilly country, and occupies several eminences near the river; is about four miles in circuit, built chiefly of wood, very deficient in cleanliness, and exhibits a striking contrast of wretchedness in some buildings, and gorgeousness in others. It contained a Catholic university, established in 1570, and new-modelled in 1803. In 1832, the university was suppressed, undoubtedly on account of the insurrection of Lithuania. Here is a seminary for the education of clergy of the Greek church, and one for the education of Catholic clergy, and a college of Piarists. The trade consists in the export of corn, hemp, flax, honey, wax, and other products of the surrounding country, conveyed by the Wilia and Niemen to Memel and Königsberg.

The *Government of Wilna* contains 25,000 square miles, and 1,350,000 inhabitants. It is a plain, with some slight elevations, woods, morasses, and lakes. In general, the soil is fertile, producing much grain, flax, and hemp. The manufactures are unimportant. The inhabitants are Lithuanians, Lettes, Poles, Jews, Greeks, Tartars, Russians, and Germans.

WILSON, Alexander, the celebrated American ornithologist, also distinguished as a writer of Scottish poetry, was born at Paisley, in 1766. His parents were industrious people of an humble rank in life; and in his thirteenth year, young Wilson was bound apprentice to a weaver. After serving an apprenticeship of three years, and working as a journeyman weaver for about four years, during which period he had cultivated his mind by his own unaided exertions, and had already given indications of poetical talent, disgusted with the confined and tedious nature of his employment, he abandoned the loom, and adopted the life of a wandering pedlar. Three years were spent in this mode of life; and, in 1789, having already prepared a volume of poems for publication, he offered his muslins, and solicited subscriptions for his work at the same time. Unsuccessful in the latter object, and tired of a pedlar's life, he once more returned to the loom. In 1791, he published a poem under the title of the Laurel Disputed, on the comparative merits of Allan Ramsay and Robert Ferguson, and, in 1792, his Watty and Meg, which, having appeared anonymously, was ascribed to Burns; a mistake, which the author, of course, felt as the highest acknowledgment of its merits. In humour and truth of description, it is certainly not surpassed by any production of the Scottish muse. Having soon after written a severe satire upon a person in Paisley, Wilson was thrown into prison: he was likewise looked upon with suspicion as a member of the society of the Friends of the People, who hailed the French revolution as a new morning of liberty; and, impelled by these circumstances, he determined to come out to the United States. He arrived at Newcastle, in the Delaware state, in 1794, and again resumed his former trade, but, after a while, turned school-master, acting in this capacity in several places in Pennsylvania. It was while thus engaged at Kingsess, near Philadelphia, that he became acquainted with Mr Bartram, the naturalist, and Mr Lawson, an engraver, whose tastes and instructions proved the occasion of calling out his own talents. He had already undertaken some long excursions for making ornithological researches, and devoted much time to the study, when he was engaged, in 1806, to assist in editing the American edition of Ree's Cyclopædia, and now began to prepare for the publication of his work on American ornithology. The first volume of this work was published in 1808, and the seventh in 1813. The interval had been passed in exploring different parts of the country, for the purpose of extending his observations, collecting specimens, and watching the habits of birds in their native haunts. In 1813, the literary materials for the eighth volume of the Ornithology were ready; but its progress was greatly retarded for want of proper assistants to colour the plates. Wilson was, therefore, obliged to undertake the whole of this department himself, in addition to his other duties, and these multifarious labours, by drawing largely upon his hours of rest, began rapidly to exhaust his con-

stitution. When his friends remonstrated with him upon the danger of his severe application, he answered, "Life is short, and without exertion nothing can be performed." A fatal dysentery at last seized him, which, after a few days' illness, carried him off, upon the twenty-third of August, 1813, being then only in his forty-eighth year. According to the authority of an American gentleman who was intimate with him, his death was accelerated by an incident in singular keeping with the scientific enthusiasm of his life. While sitting in the house of one of his friends, he happened to see a bird of a rare species, and which he had been long seeking for in vain, fly past the window. He immediately rushed out of the house, pursued the bird across a river, over which he was compelled to swim, shot and returned with the bird, but caught an accession of cold which carried him off. He was buried next day in the cemetery of the Swedish church, in the district of Southwark, Philadelphia, with all the honours which the inhabitants could bestow on his remains. The clergy and all the public bodies walked in procession, and wore crape on their arms for thirty days. A simple marble monument was placed over him, stating shortly the place and year of his birth, the period of his emigration to America, and the day and cause of his death. The whole plates for the remainder of the Ornithology having been completed under Wilson's own eye, the letter-press of the ninth volume was supplied by his friend Mr George Ord, who had been his companion in several of his expeditions, as also a memoir of the deceased naturalist. Three supplementary volumes, containing American birds not described by Wilson, have been published by Charles Lucien Bonaparte (fol., 1825—1828).

There have been few instances, where the glowing fire of genius was combined with so much strong and healthy judgment, warmth of social affection, and correct and pure moral feeling, as in the case of Alexander Wilson. He is said to have been strikingly handsome in person, although rather slim than robust, with a countenance beaming with intelligence, and an eye full of animation and fire. His career furnishes a remarkable example of the success which, sooner or later, is the reward of perseverance. It is true he did not attain riches, but upon the possession of these his happiness was not placed. He wished, to use his own words, "to raise some beacon to show that such a man had lived," and few have so completely achieved the object of their ambition.

WILSON, James, a signer of the American Declaration of Independence, was born in Scotland about the year 1742. His father was a respectable farmer. He studied successively at Glasgow, St Andrew's, and Edinburgh, and then left Scotland for America. He arrived, in 1776, in Philadelphia, where he was first employed as a tutor in the Philadelphia college and academy, in which capacity he acquired a high reputation as a classical scholar. In a few months, however, he relinquished that occupation, and commenced the study of the law. At the expiration of two years, he was admitted to the bar, and began to practise, first at Reading, and then at Carlisle. From the latter place he removed to Annapolis, and, in .778, returned to Philadelphia, where he continued to reside during the rest of his life. He was elected, in 1775, a member of congress, and took his seat on the 10th of May. He was a uniform advocate of the declaration of independence, though he may have thought, perhaps, that the measure was brought forward prematurely: he voted in favour of it, as well on the first of July, in opposition to the majority of his colleagues from Pennsylvania, as on the 4th, in conjunction with the majority. In 1777, he was superseded in congress, through the influence of party spirit; but, in 1782, he was again honoured with a seat. In 1779, he received the appointment of advocate-general for the French government in the United States, an office, the duties of which were both arduous and delicate. He resigned it in 1781, in consequence of difficulties respecting the mode of remuneration. He continued, however, to give advice in such cases as were laid before him by the ministers and consuls of France, until 1783, when the French transmitted to him a present of ten thousand livres. In 1787, Mr Wilson was a member of the convention which framed the constitution of the United States, and was one of the committee who reported the draught. In the state convention of Pennsylvania, he was principally efficient in causing the constitution to be adopted. He was subsequently a member of the convention which changed the constitution of Pennsylvania, to render it conformable to that of the United States, and, being one of the committee appointed to prepare, was intrusted with the duty of making the draught of the necessary form. In 1789, he was appointed, by general Washington, a judge of the supreme court of the United States; and, whilst on a circuit in North Carolina, in the discharge of his functions as such, he died at Edenton, 28th of August, 1798, aged about fifty-six years. As a lawyer and judge, Mr Wilson was eminent for talent and integrity. In private life he was courteous, kind, and hospitable. His political and legal disquisitions are extant in three volumes, and much esteemed.

WILSON, Richard, an English landscape painter, was born at Pineges, in Montgomeryshire, in 1714. After receiving a classical education, he was sent to London, and placed as a pupil with an obscure portrait painter. On leaving his master, he first practised in the same branch of his profession in London, but with no great success. At length he went to Italy, where he occasionally exercised his talents in studies of landscape; and at Venice meeting with Zuccarelli, that artist persuaded him to devote himself wholly to the cultivation of that department of the art in which he attained so much excellence. After staying some time at Rome and Naples, where he acquired great reputation, he returned to England in 1755, and settled in the metropolis. He had for a while much employment; but he was at length doomed to undergo indifference and neglect, and was reduced to solicit the office of librarian to the royal academy, of which he was one of the brightest ornaments. He died in May, 1782. His taste was exquisite; and whatever came from his easel bore the stamp of elegance and truth. If posthumous fame could compensate for contemporary neglect, the fate of Wilson might be considered as fortunate; for he has been ranked among the greatest artists of modern times.

WILTSHIRE; an inland county of England, having Gloucestershire on the north, Berkshire and Hampshire on the east, Dorsetshire on the south, and Somersetshire and Gloucestershire on the west. The boundaries of the county are very irregular, not following the course of any river. The area of the county is equal to about 1379 square miles, or 882,560 statute acres.

Wiltshire may be said to be naturally divided into two portions, by an irregular range of hills, which extends transversely through the greater part of the county, in a direction inclining from the north-east to the south-west. These districts are usually denominated South and North Wiltshire, and differ very materially from each other, not only in appearance, but in almost every distinguishing quality. South Wiltshire forms the western division of a vast track of chalk hills, comprising a considerable part of Hampshire, and having for its boundaries the rich lands of Berkshire, and the extreme verge of the Marlborough hills on the north; the broken ground of Somersetshire on the west; the New Forest of Hampshire on the south; and the heaths of Surrey and Sussex, together with the West Downs of the latter county, on the east. North Wiltshire differs completely from the southern division of the county in its general appearance. Instead of a constant series of "chalky waves," the aspect of this district, which extends from the verge of the Downs to the hills of Gloucestershire, is nearly that of a perfect flat, the few deviations from the ordinary level being for the most part so gradual as scarcely to be perceptible on a cursory view. The country here, moreover, is so extremely close and well wooded, that when viewed from any of the surrounding hills, it appears like one vast plantation of trees. If examined in detail, however, it is found also to contain many extensive tracts of rich pasture land, situated on the banks of the lower Avon and the Thames, and of such smaller streams as flow into the one or the other of these rivers.

With regard to agriculture, the southern division may be regarded as one vast sheep farm. The summer stock of sheep kept in this division alone was formerly estimated at somewhat more than 500,000 head, including lambs, of which at least 150,000 were bred annually. In the south-west portion of Wiltshire, adjoining to Dorsetshire, a considerable number of cows are kept for the purpose of making butter, in order to assist, with the contiguous parts of the latter county and Somersetshire, in the supply of the cities of Bath and Salisbury, and some towns of the northern district, which lie immediately in the neighbourhood of the great cheese dairies, where whey butter only is made. With respect to the arable cultivation of this district, it possesses no very peculiar features. Fallowing is in very general use; and the chief manure is the produce of the sheep-fold. The most general crops on the high white lands are wheat and barley, and on the grounds in the valleys, green crops for the winter maintenance of the sheep and cattle. Potatoes are likewise planted in considerable quantities on the sandy veins which run through the county in this division. On the meadow lands, irrigation is practised perhaps more extensively here than in any county of England, and with signal advantages. Indeed, water meadows are indispensable appendages to a South Wiltshire farm; as without them it would be almost impossible to pursue the present system of sheep breeding, which is certainly more profitable to the farmer, to his landlord, and to the country at large, than any other mode of agriculture that could be substituted in its stead. The distinguishing feature of the agriculture of North Wiltshire is the pasturage or grazing system; which is conducted principally with a view to the supply of the dairy with milk for the manufacture of cheese. Great numbers of cows are therefore kept in that district, and a considerable part of them is likewise reared in it. The cheese of North Wiltshire has long been deservedly famed; though for some time after it became the staple commodity here, it was sold in the London market as the manufacture of Gloucestershire. Now, however, much of it is well known under the application of the "North Wiltshire," and is very generally esteemed superior to the cheese of the adjoining county. In all things relative to the dairy, indeed, the inhabitants of this district probably excel those of any part of England. But though the principal part of the pasture lands in this district is devoted to the purposes of the dairy, a considerable portion of them is also appropriated to grazing cattle for sale. Pigs are also reared in vast numbers in different parts of the county.

The manufactures of this county are of considerable importance. Woollens were formerly made to a great extent; at Salisbury the manufacture has greatly fallen off within these 20 years, and very little is now made. Salisbury likewise carries on a considerable manufactory of cutlery and steel goods, which are considered equal in workmanship to any made in the kingdom. Carpets of an excellent quality, kerseymere and linsey are made at Wilton. Broad cloths and other descriptions of woollen goods are made at Bradford, Heytesbury, Chippenham, Westbury, Trowbridge, and all the adjacent towns and villages. Linen is manufactured at Mere; fustians and thicksets at Aldbourn. Linen and silk are made to a considerable extent at Stourton and Maiden-Bradley. The ale called "Wiltshire" and "Kennet," is in great estimation, being principally sent to London. The principal export of the county consists of its agricultural produce; and besides supplying its own extensive manufactories, it sends a large proportion of its wool out of the county. The imports consist chiefly of what is required for domestic consumption, such as coal, &c. Population of the county in 1841, 258,733.

WINCHESTER; an ancient city of England, in Hampshire, situated near the river Itchin, 62 miles S. W. by W. from London. It is about half a mile long, from east to west, and contains nine parish churches. It was known in the time of the Romans, who made it one of their military stations. During the reign of Egbert, it became the metropolis of the kingdom, but was soon rivalled by London. Its commerce was also obstructed by various accidents; and, in the reign of Henry VIII. it received a blow, in the dissolution of monasteries and the destruction of religious houses; after which, Winchester contained scarcely any thing more than a shadow of its former grandeur. In the reign of Charles I., the city and castle of Winchester, which remained faithful to that monarch, were compelled to surrender to Cromwell, who destroyed the works of the castle, together with the fortifications of the city. The cathedral of Winchester is one of the most interesting buildings in England. The original structure, built by Saxon kings, is entirely destroyed. In the eleventh century, the cathedral was rebuilt by bishop Walkelin. The next improvement was undertaken by William de Edyngton, treasurer to Edward III., and was finished by bishop Wykeham in 1394: the eastern part was rebuilt at the beginning of the sixteenth century. The length of the cathedral is 556 feet. Next to the cathedral, in interest and antiquity, stands the college of St Mary's, founded by Wykeham in 1387,

as a nursery for his New College at Oxford. The foundation provides for a warden, ten fellows, seventy scholars, one master, three chaplains, besides many subordinate members. The buildings consist of two quadrangles, a cloister, library, and a large modern school-room. The windows of the chapel are filled with stained glass; and over the altar is a picture (by Le Moine) of the Salutation. The tower, built in the fifteenth century, is remarkable for its symmetry. Over the school-room door is a bronze statue of Wykeham, cast by Ciber (1692). The ecclesiastical buildings in this city were formerly numerous, the churches and chapels alone amounting to upwards of ninety, and several having colleges and monasteries attached to them. Scarcely twelve of them now remain. Here are several meeting-houses for dissenters. Near the college are the ruins of the celebrated episcopal residence, called Wolvesey castle, destroyed by Cromwell, in 1646. Winchester castle, built by William the Conqueror, occupied the spot where the palace, erected by Charles II., now stands, and which, during the war, was converted into a barrack. The area of the castle was about 850 feet in length, north and south, and 250 in breadth. The chapel belonging to the castle has been converted into a county hall. At the east end is suspended the curiosity called *Arthur's round table*, which tradition has attributed to king Arthur. Near the cathedral is the Widow's college, founded by bishop Morley, for the relicts of deceased clergymen. The city contains two almshouses, and a great number of charitable bequests belong to it. In the town-hall are the city archives, the original Winchester bushel, given by king Edgar, with other measures, both for quantity and length, fixed as standards by succeeding princes, and various curious memorials of antiquity. At the west end of the town is an obelisk, having an inscription commemorative of the calamities occasioned by the plague, in 941, 1348, and 1668. Two members are sent to parliament. Winchester has very little trade. An ancient wool-combing manufactory still exists in it; and, of late years, the silk manufacture has been introduced. There is a navigable river or canal to Southampton. All the public business of Hampshire is, however, transacted here. Its cathedral and its college ensure to it the residence, also, of a considerable number of the superior clergy, with their families. Population, in 1831, 9,212; in 1841, 10,732.

WINCHESTER BUSHEL; the English standard until 1826, when the imperial standard bushel was introduced. (See *Measures*). The Winchester bushel is eighteen and a half inches wide and eight inches deep, and contains 2150·42 cubic inches, while the imperial standard bushel contains 2218·40 cubic inches. To convert Winchester bushels into imperial bushels, multiply the Winchester measure by 31, and divide by 32. The name of the old measure was derived from the circumstance that the standard measure was kept at Winchester.

WINCKELMANN, John Joachim. This scholar, who has done so much for the criticism and history of art, and the study of antiques, was born at Stendal, in Altmark, Dec. 9, 1717, and was the son of a shoemaker. Extreme poverty could not suppress his early-awakened love of study. The schoolmaster of his native place, soon became attached to him, and took him into his family. After having made considerable proficiency in Greek and Latin, he went, in 1735, to a gymnasium at Berlin, and thence on foot to Hamburg, in order to purchase some ancient classics, with money begged on the way. In 1738, he entered the university of Halle, where he lived for two years on a small stipend, and the contributions of others; but, as ancient literature and the belles-lettres interested him more than theology, he neglected the lectures, but assiduously frequented the libraries, and occupied himself with the ancients. After having been a private tutor and an usher for a number of years, during which he pursued his studies with indefatigable zeal, he applied, in 1748, to the minister, count von Bünau, of Nöthenitz, near Dresden, and offered his services as a librarian. The count had already a librarian, but expressed his willingness to appoint him secretary of the library, with a salary of eighty rix-dollars. He accepted the offer, and lived some years employed partly in his private studies, partly in labour for the count. The proximity of Dresden, with its rich treasures of art, and the acquaintance of some artists, awakened in him a love of the arts. To visit Italy, the native country and the home of the arts, was now the great object of his wishes. At length, father Rauch, the confessor of the king of Poland, enabled him to live in Rome by a small pension. In 1744, he formally embraced the Catholic religion, and left the service of count Bünau; but, before going to Rome, he remained for a time in Dresden, devoted to the study of the arts. In the autumn of 1755, he set out for Rome, with a pension from the king of 200 rix-dollars for two years. There he soon found friends and patrons, and had an audience of Benedict XIV. who received him graciously, and promised him his protection. Winckelmann now devoted himself to the study of the works of ancient and modern art. In the spring of 1758, he visited Naples, where he became acquainted with the most distinguished men, and obtained access to the antiquities of Portici, Herculaneum, and Pompeii. After an absence of ten weeks, he returned to Rome. In September, 1758, at the repeated invitation of count Munzel Stosch, who had inherited from his uncle one of the richest and most beautiful cabinets of gems, he paid a visit to Florence, where he spent nine months in arranging and making a catalogue of that collection. This catalogue appeared at Florence, under the title *Description des Pierres gravées du feu Baron de Stosch.* About this time, he accepted the situation of librarian, and superintendent of antiquities to cardinal Albani, who gave him the use of his house, and a salary of 120 scudi. In the summer of 1760, he finished the *Anmerkungen über die Baukunst der Alten*, which was published two years after in Germany. In 1762, Winckelmann, in company with count Brühl, again visited Naples and its remarkable environs, and soon after gave the discoveries and observations made there to the public, in his Letter to Count Brühl respecting the discoveries made at Herculaneum. Five years afterwards, he published his *Monumenti antichi inediti*, in the Italian language, and for the benefit of the Italians. In 1763, he published a small essay On the Perception of the Beautiful. In the same year, he was made superintendent of all the antiquities in and about Rome, with a monthly salary of 12—15 scudi. In the beginning of 1764, appeared his principal work, *Geschichte der Kunst.* In the same spring, he made a third journey to Naples, the results of which he published in the *Nachrichten von der*

*neuesten Herculanischen Entdeckungen.* In 1767, he published Notes to his History of Art. In April, 1768, he set out on a journey to Germany. He arrived at Vienna May 12, and was received with great honour by prince Kaunitz and others, and was presented, at Schönbrunn, to the empress Maria Theresa, who received him with distinction, and bestowed upon him presents of value; and, in the beginning of June, he departed for Trieste. There he was joined by an Italian, named Francesco Arcangeli, a villain, who had been, a short time before, condemned to death in Vienna, but had been pardoned, and banished from the country. His obsequiousness won the confidence of the unsuspecting Winckelmann, who thoughtlessly showed him his gold medals, and other articles of value. Arcangeli undertook the care of the affairs of the journey, while Winckelmann remained in the inn. June 8, as he sat writing at table, the Italian entered his chamber to announce his sudden departure, and to take leave. He asked to see once more the gold medals; and while Winckelman was kneeling before the box, about to take them out, the Italian threw a noose around his neck, and inflicted five mortal stabs in the belly of the unfortunate man, and then fled without taking any thing. He was subsequently apprehended, and broken on the wheel. Winckelmann expired in a few hours, having made his will, in which he appointed cardinal Albani his sole heir. His manuscript of the second edition of the *Geschichte der Kunst*, which he carried about him, came into the possession of the imperial academy of fine arts at Vienna, which, in 1776, caused an edition to be published from it. The great merit of Winckelmann consists in his elucidation of the principles of art, and his exhibition of the works of art in their true character and connexion. His treatises, moreover, contain a great mass of historical illustrations. With the exception of the *Monumenti inediti*, the *Description des Pierres gravées*, and the various collections of letters, all his works may be found in the edition begun by Fernow, and finished by Meyer and Schulze (Dresden, 1808—17, 7 vols.)—See Göthe's excellent treatise *Winckelmann und sein Jahrhundert.* A supplement to the biographical and literary notices of Winckelmann has been published by Gurlitt, (Hamburg, 1820.)

WINCKELRIED. See *Winkelried.*

WIND; a sensible current in the atmosphere. The motions of the atmosphere are subject in some degree, to the same laws as those of the denser fluids. If we remove a portion of water in a large reservoir, we see the surrounding water flow in to restore the equilibrium; and, if we impel in any direction a certain portion, an equal quantity moves in a contrary direction, from the same cause; or if a portion, being rarefied by heat, or condensed by cold, ascends in the one instance, and descends in the other, a counter-current is the visible and natural result; and similar effects are found to follow the same causes in the atmospheric fluid; thus no wind can blow without a counter or opposite current; nor can any wind arise without a previous derangement of the general equilibrium, the general causes of which may be stated as follows:— 1. The ascent of the air over certain tracts heated by the sun; 2. evaporation, causing an actual increase in the volume of the atmosphere; 3. rain, snow, &c., causing an actual decrease in its volume, by the destruction of the vapour. In the Philosophical Transactions of the Royal Society of London, (vol. 51st), there is a table of the different velocities and forces of winds drawn from a considerable number of facts and experiments, which give the following results:—

| Velocity of the Wind. | | Perpendicular Force on one square Foot in Avoirdupois Pounds and Parts. | |
|---|---|---|---|
| Miles per Hour. | Feet per Second. | | |
| 1 | 1·47 | ·005 | Hardly perceptible. |
| 2 | 2·93 | ·020 | Just perceptible. |
| 3 | 4·4 | ·044 | |
| 4 | 5·87 | ·079 | Gently pleasant. |
| 5 | 7·33 | ·123 | |
| 10 | 14·67 | ·492 | Pleasant, brisk. |
| 15 | 22· | 1·107 | |
| 20 | 29·34 | 1·968 | Very brisk. |
| 25 | 36·67 | 3·075 | |
| 30 | 44·01 | 4·429 | High wind. |
| 35 | 51·34 | 6·027 | |
| 40 | 58·68 | 7·873 | Very high wind. |
| 45 | 66·01 | 9·963 | |
| 50 | 73·35 | 12·300 | Storm or tempest. |
| 60 | 88·02 | 17·715 | Great storm. |
| 80 | 117·36 | 31·490 | Hurricane. |
| 100 | 146·7 | 49·200 | Hurricane that tears up trees and carries buildings before it. |

Currents thus produced may be permanent and general, extending over a large portion of the globe; periodical, as in the Indian ocean, or variable and occasional, or, at least, uncertain, as the winds in temperate climates. General or permanent winds blow always nearly in the same direction, and are called *trade-winds.* On the north of the equator, their direction is from the north-east (varying at times a point or two of the compass each way): on the south of the equator, they proceed from the south-east. The origin of them is this:—The powerful heat of the torrid zone rarefies, or makes lighter, the air of that region: the air, in consequence of this rarefaction, rises, and, to supply its place, a colder atmosphere from each of the temperate zones moves towards the equator. But (as in the case of the polar currents in the ocean) these north and south winds pass from regions where the rotatory motion of the earth's surface is less to those where it is greater. Unable at once to acquire this new velocity, they are left behind, and, instead of being north and south winds, as they would be if the earth's surface did not turn round, they become north-east and south-east winds. The space included between the second and fifth degrees of north latitude is the internal boundary of the two winds; and this space experiences calms, frequently interrupted, however, by violent storms. The reason why it is situated to the north of, instead of exactly at, the equator, seems to be, that the northern hemisphere is warmer than the southern; for, since the trade-winds are the result of the continual ascent of heated air in the equatorial parts, their internal boundary will be where the principal ascent is going on, that is, where the annual temperature is the highest, which, on account of the above-mentioned inequality of temperature in the two hemispheres, will not be at the equator, but somewhat to the north of it. The external limits of the trade-winds are, at a medium, in about the thirtieth degrees of north and south latitude respectively; but each limit, as the sun approaches the neighbouring tropic, declines farther from the equator. The position of the sun has an influence, also, on their strength and direction; for, when that luminary is near the tropic of Cancer, the south-east wind becomes gradually more southerly,

and stronger, and the north-east weaker, and more easterly. The effect is reversed when he gets towards the tropic of Capricorn. The trade-winds would blow regularly round the whole globe within the distance of about thirty or forty degrees from the equator each way, if the space within those limits were all covered with water; but the uneven surface and unequal temperature of the land divert and derange them. It is on this account that the trade-winds are constantly experienced only over the open ocean. The larger the expanse of ocean over which they range, the more steadily they blow; thus, in the Pacific, they are commonly more steady than in the Atlantic ocean, and in the South than in the North Atlantic. In sailing from the Canaries to Cumana, on the north coast of South America, it is hardly necessary to touch the sails of the vessel. The voyage across the Pacific, from Acapulco, on the west coast of Mexico, to the Philippine islands, is performed with equal facility; and, if there were a channel through the isthmus of Panama, a westward passage from the Atlantic to China would be more speedy and safe than the usual navigation thither round the cape of Good Hope. The only interruption to the evenness of this voyage would be in the Caribbean sea and the gulf of Mexico, where the trade-wind blows impetuously, and is sometimes interrupted by westerly winds. It would not be possible, however, to return by the same route, because, in sailing east, way must be made to the northward, in order to get beyond the region of the trade into that of the variable winds. Both in the Atlantic and in the Pacific ocean, the current of the trade-winds becomes broader, and more directly east in its course, as it advances from one side to the other of those extensive basins. On the west coast of Africa, owing to the rarefaction which the air undergoes over that continent, the wind is mostly turned towards the shore: from cape Bojador to cape Verde, it is generally north-west, and thence to the island of St Thomas, under the equator, it bends gradually, first to the west, and then to the south-west. Along the coasts of Chili and Peru, a south wind prevails. These are two instances of the interruption which the trade-winds experience in the neighbourhood of large masses of land. In the Indian ocean, the south-east trade-wind prevails between 28° and 10° of south latitude, from within a few degrees of the east side of Madagascar, nearly to the coast of New Holland; but, from the tenth degree of south latitude to the northern shores of that ocean, the uniformity of the tropical movements of the atmosphere is destroyed by the monsoons, which belong to the class of periodical winds. These blow half the year from one quarter, and the other half from the opposite direction. When they shift, variable winds and violent storms prevail for a time, which render it dangerous to put to sea. They, of course, suffer partial changes in particular places, owing to the form and position of the lands, and to other circumstances; but it will be sufficient to give their general limits and directions. Northward from the third degree of south latitude, a south-west wind blows from April to October; from October to April, a north-east. These monsoons extend over the China sea; but here they incline more to the direction of north and south. Between the third and tenth degrees of south latitude, a north-west wind blows from October to April, and a south-east during the other six months of the year: the former is seldom steady in the open sea; but in December and January, it sometimes extends northward a degree or two beyond the equator. These two monsoons have the greatest strength and regularity in the Java sea, and thence eastward towards New Guinea. The facts above exhibited may be thus summed up: From April to October a south-west wind prevails north of the equator; southward of this, a south-east wind; from October to April, a north-east wind north of the equator, and a north-west between the equator and 10° of south latitude; south of this, the usual trade-wind, which is in motion through the whole year. In attempting to account for these movements of the atmosphere over the Indian ocean, the first thing which strikes us is, that the north-east and south-east monsoons, which are found the one on the north, and the other on the south side of the equator, are nothing more than the trade-winds blowing for six months, and then succeeded, for the remainder of the year, by winds directly opposite. It is also to be noticed that the south-west monsoon in the northern, and the north-west monsoon in the southern hemisphere, each prevails while the sun is perpendicular to their respective regions. They are, therefore, connected with the immediate presence of that luminary. If the Indian ocean were not bounded, as it is, by land on the north, the trade-winds would blow over it (at least in the central parts) as they do in the Atlantic and Pacific oceans. But it is well known that water, owing to its transparency, is very little warmed by the sun's rays, whereas the land is powerfully heated by them; consequently, when the sun is between the equator and the tropic of Cancer, India, Siam, and the adjacent countries, become much hotter than the ocean; the air over them is rarefied, and ascends: colder air then rushes in from the Indian ocean, and a south-west wind is produced. When the sun, however, has crossed to the south of the equator, these countries become gradually cool, and the north-east trade-wind resumes its course. At the same time, the north-west monsoon commences in the southern hemisphere, in consequence of the air over New Holland being rarefied by the presence of the sun. The monsoons in the Red sea blow in the direction of the shores; and a similar effect is observed in the Mozambique channel, between Africa and Madagascar, where these winds follow the line of the channel. On the coast of Brazil, between cape St Augustine and the island of St Catharine, and in the bay of Panama, on the west of the isthmus of that name, periodical winds occur somewhat similar to the monsoons of Asia. The land and sea-breezes, which are common on coasts and islands situated between the tropics, are another kind of periodical winds. During the day, the air over the land is strongly heated by the sun, and a cool breeze sets in from the sea; but, in the night, the atmosphere over the land is cooled, while the sea, and, consequently, the air over it, retains a temperature nearly even at all times; accordingly, after sunset, a land-breeze blows off the shore. The sea-breeze generally sets in about ten in the forenoon, and lasts till six in the evening. At seven, the land-breeze begins, and continues till eight in the morning, when it dies away. These alternate breezes are, perhaps, felt more powerfully on the coast of Malabar than elsewhere. Their effect there extends to a distance of twenty leagues from the land. During summer, the sea-breeze is very

perceptible on the coasts of the Mediterranean, and sometimes even as far north as Norway. We thus perceive that, within the limits of from twenty-eight to thirty degrees on each side of the equator, the movements of the atmosphere are carried on with great regularity; but, beyond these limits, the winds are extremely variable and uncertain, and the observations made have not yet led to any satisfactory theory by which to explain them. It appears, however, that, beyond the region of the trade-winds, the most frequent movements of the atmosphere are from the south-west in the north temperate zone, and from the north-west in the south temperate zone. This remark must be limited to winds blowing over the ocean, and in maritime countries; because those in the interior of continents are influenced by a variety of circumstances, among which the height and position of chains of mountains are not the least important. These south-west and north-west winds of the temperate zones are most probably occasioned in the following manner: In the torrid zone, there is a continual ascent of air, which, after rising, must spread itself to the north and south in an opposite direction to the trade-winds below. These upper currents becoming cooled above, at last descend and mix themselves with the lower air: part of them may perhaps fall again into the trade-winds; and the remainder, pursuing its course towards the poles, occasion the north-west and south-west winds of which we have been speaking. It has also been conjectured that these winds may frequently be caused by a decomposition of the atmosphere towards the poles, from part of the air being at times converted into water. See *Hurricane, Whirlwinds, Harmattan, Simoom,* &c.

The following facts, illustrative of the course of the winds in the North Atlantic, are of practical interest. They are taken from a statement of passages made from 1818 to 1827, embracing a period of ten years, and comprising 188 complete voyages.

| | |
|---|---|
| The passages from New York to Liverpool, during this period, averaged each | 24 days. |
| Those from Liverpool to New York, | 38 .. |
| Shortest passage from New York to Liverpool, in December, | 16 .. |
| Longest, in December, | 37 .. |
| Shortest passages from Liverpool to New York, April and February, | 22 .. |
| Longest passage, December to February, | 71 .. |

These passages are reckoned from city to city.

The passages from New York averaged in

| | | | |
|---|---|---|---|
| January, | 24 days. | July, | 24 days. |
| February, | 24 .. | August, | 23 .. |
| March, | 23 .. | September | 25 .. |
| April, | 24 .. | October, | 24 .. |
| May, | 24 .. | November, | 22 .. |
| June, | 25 .. | December, | 24 .. |

Passages from Liverpool averaged in

| | | | |
|---|---|---|---|
| January, | 42 days. | July, | 40 days. |
| February, | 40 .. | August, | 36 .. |
| March, | 36 .. | September, | 33 .. |
| April, | 34 .. | October, | 37 .. |
| May, | 35 .. | November, | 38 .. |
| June, | 38 .. | December, | 48 .. |

See Romney's *Tableau des Vents*, &c. (Paris, 1806, 2 vols.).

WIND INSTRUMENTS. See *Instruments.*

WINDMILLS. Pomponius Sabinus or Lætus, a writer of the fifteenth century, says that windmills were in use among the Romans; but the silence of Vitruvius and Seneca, who have spoken of the advantages of wind, have led many writers to doubt the truth of this statement. Some authors have maintained that they were used in France in the sixth century, while others are of opinion that they were brought into Europe by the crusaders; and Gibbon (ch. 61) says that they were first invented in the dry country of Asia Minor. It is certain that they were in use in the western countries of Europe in the twelfth century. (See Beckmann's *History of Inventions*, vol. i.) When wind is employed as the first mover of machinery, it may be applied in two ways—1. by receiving it upon sails which are nearly vertical, and which give motion to an axis nearly horizontal, in which case the machine is called a *vertical windmill*, because the sails move in a vertical plane; and, 2. by receiving it upon vertical sails which move in a horizontal plane, and give motion to a vertical axis, in which case it is called a *horizontal windmill*. As a horizontal windmill consists of vertical sails moving horizontically around a vertical arbour or windshaft, no motion would arise on exposing it to the action of the wind, as the effect of the wind upon the sails on one side would be counterbalanced by its action upon the corresponding sails on the opposite side. Hence it is necessary either to screen the sails on one side from the action of the wind, or to construct the sails in such a manner that, when they return against the wind, they present only their edge to its action. The method of screening the returning sails from the wind is adopted in Tartary and some provinces of Spain, and is the most simple that has been tried. When the screen is not used, the sails may be fixed like floatboards, with hinges, on the circumference of a large drum or cylinder, so that, when they are to receive the action of the wind, they stand at right angles to the drum, and when they return against the wind they fold down upon its circumference. Other ingenious methods have also been devised for bringing back the sails against the wind. In the vertical windmill, on the other hand, the arms which carry the sails revolve in a plane facing the wind. In this arrangement, if the sails were in the same plane with the arms, the wind would fall perpendicularly upon them, and merely press the arms against the building, perpendicular to the plane in which they are designed to move. If, on the other hand, the sails were perpendicular to the plane in which the arms move, their edges would be presented to the wind, and would, therefore, offer no resistance, and there would be no motion. In order to make the arms revolve, the sails must, therefore, be placed in some direction intermediate between those of the wind and the plane in which the arms revolve. In determining the angle at which the planes of the sails should be inclined to the axis of motion, or the direction of the wind, it is necessary to consider the sail in motion; and the neglect of this element in the calculation has led to very great errors in theoretical calculations. The sail being in motion, the velocities of the sail and the wind must both be taken into account; for, if the sail moved before the wind with a speed equal to that of the wind itself, no effect would be produced. The effect will depend on the difference of the velocities, that being the velocity with which the wind strikes the sail. Now, as the obliquity of the sail to the wind should depend on the force with which the wind acts upon it, and as those parts of the sail which are nearer to the centre of motion move more slowly than those which are more remote, it follows that the position of the sail should vary at different distances from the centre of rotation. From the experiments of Mr

Smeaton on this subject (Philosophical Transactions, 1759), it appears that the following positions are the best. Suppose the radius to be divided into six equal parts, and call the first part, beginning from the centre, one, the second two, and so on, the extreme part being six:—

| No. | Angle with the Axis. | Angle with the Plane of Motion, or Angle of Weather. |
|---|---|---|
| 1 | 72° | 18° |
| 2 | 71 | 19 |
| 3 | 72 | 18 |
| 4 | 74 | 16 |
| 5 | 77½ | 12½ |
| 6 | 83 | 7 |

As it is necessary that a windmill should face the wind from whatever point it blows, the whole machine, or a part of it, must be capable of turning horizontally. Sometimes the whole mill is made to turn upon a strong vertical post, and is therefore called a *post mill;* but, more commonly, the roof or head only revolves, carrying with it the windwheel and its shaft, the weight being supported on friction rollers. In order that the wind itself may regulate the position of the mill, a large vane, or weathercock, is placed on the side which is opposite the sails, thus turning them always to the wind. But in large mills the motion is regulated by a small supplementary windwheel, or pair of sails, occupying the place of the vane, and situated at right angles with the principal windwheel. When the windmill is in its proper position, with its shaft parallel to the wind, the supplementary sails do not turn. But when the wind changes, they are immediately brought into action, and, by turning a series of wheelwork, they gradually bring round the head to its proper position.

*Adjustment of Sails.* On account of the inconstant nature of the motion of the wind, it is necessary to have some provision for accommodating the resistance of the sails to the degree of violence with which the wind blows. This is commonly done by clothing and unclothing the sails; that is, by covering, with canvass or thin boards, a greater or smaller portion of the frame of the sails, according to the force of the wind at different times. A method has been devised for producing the same effect, by altering the obliquity of the sails; and windmills have been so made as to regulate their own adjustment by the force of the wind. If we suppose a windmill, or windwheel, to consist of four arms, and that the sails were connected to these arms at one edge by means of springs, the yielding of these springs would allow the sails to turn back when the wind should blow with violence; and their elasticity would bring them up to the wind whenever its force abated. This effect has been produced by a weight acting on the sails through a series of levers. A loose iron rod, passing through the centre of the axle of the windwheel, receives the action of the weight at one end, and communicates it to the sails at the other.

WINDPIPE (*trachea*); a cartilaginous and membranous canal, through which the air passes into the lungs. Its upper part, called the *larynx*, is composed of five cartilages, the uppermost of which, called the *epiglottis*, closes the passage to the lungs, when a person is in the act of swallowing. The two front cartilages of the larynx, the thyroides, or Adam's apple, and the annular, which resembles a ring, may be felt directly under the skin. The various cartilages of the larynx are united to each other by elastic fibres, and are enabled, by their several muscles, to dilate or contract the passage, and perform those numerous motions which render the larynx so important as an organ of the voice; for, when the air passes directly into the trachea through a wound, it produces little or no sound. (See *Voice.*) From the larynx the canal takes the name of *trachea*, and, after extending as far down as the fourth or fifth vertebra, it divides into two branches, running to the two lobes of the lungs, to which they are distributed by an infinite number of branches. The trachea is furnished with muscular fibres, by the contraction or relaxation of which it is enabled to shorten or lengthen itself, and also to dilate or contract the diameter of its bore. The cartilages of the trachea, by keeping it constantly open, afford a free passage to the air, which we are obliged to be incessantly respiring; and its membranous part, being capable of contraction or dilatation, enables us to receive and expel the air in a greater or less quantity, and with more or less velocity, as may be required in singing and declamation. (See *Respiration.* For the structure of the windpipe in birds, see *Ornithology.*) This membranous structure of the trachea posteriorly, seems likewise to assist in the descent of the food by preventing that impediment to its passage down the œsophagus, which might be expected if the cartilages were complete rings.

WIND SAILS, in a ship, are made of the common sail-cloth, and are usually between twenty-five and thirty feet long, according to the size of the ship, and are of the form of a cone ending obtusely. When they are made use of, they are hoisted by ropes to about two thirds or more of their height, with their bases distended circularly, and their apex hanging downwards in the hatchways of the ship. Above each of these, one of the common sails is so disposed that the greatest part of the air, rushing against it, is directed into the wind sail, and conveyed into the body of the ship, to promote ventilation, &c.

WINDERMERE; a celebrated lake in the county of Westmoreland, the most extensive sheet of water in England. It is situated at the foot of the Furness fells, and is distinguished by the variety of beautiful prospects which it exhibits. It is about fifteen miles in length from north to south, and about one broad on an average, though in many places much less.

WINDHAM, Sir William. See *Wyndham.*

WINDHAM, William. See *Supplement.*

WINDOW. In the most ancient eras, the windows of habitations were very small and narrow; and the same remark is true of the castles and other edifices which were constructed during the middle ages. In the painting on the Greek vase which represents Jupiter about to scale the window of Alcmena, the opening is exceedingly small. According to Seneca, those of the baths of Scipio were so small that they merited not the name, and might rather be denominated *crevices.* As the Romans improved, however, in the elegant arts, this particular was not overlooked; and both their town and country houses were decorated with numerous and ample windows. It was not customary to have them overlooking the street; and they were, in the majority of instances, confined to the interior court of the house. The ancient temples had not, generally, windows: some exceptions, however, exist to this observation. Before the use of glass became common, which was not till towards the end of the twelfth century, the windows

in England seem generally to have been composed of paper, which, properly prepared with oil, forms no contemptible defence against the intrusions of the weather, and is a tolerable medium for the admission of light. In warm climates, as in the West Indies, windows are often quite open, without glass or any translucent medium to admit light while it excludes the air. In Russia, salt is used to clean windows from frost, on account of its effect in liquefying this substance. It is rubbed on the glass with a sponge. In England, windows are one of the articles subjected to taxation

WINDSOR, OR NEW WINDSOR; a town in Berkshire, England, situated on the right bank of the Thames, which separates it from Buckinghamshire, twenty-two miles west of London. It is beautifully situated on the side of a hill, and has many handsome buildings; but its chief ornament is its castle, which it owes to William the Conqueror. (See the next article.) On the south side of the town is Windsor Great Park, well stocked with deer, in which is situated the cottage of George IV. It was formerly fourteen miles in circuit, but has lately been much enlarged. The gardens are spacious and elegant. Windsor forest, fifty-six miles in circuit, was originally formed for the exercise of the chase, a favourite amusement of many of the English sovereigns. Windsor sends two members to parliament. Population in 1841, 7786. *Old Windsor* is the name of a village two miles from New Windsor.

WINDSOR CASTLE was originally built by William the Conqueror, in the eleventh century, and has been the favourite country residence of the English kings for upwards of 700 years. It stands on a high hill, and commands a beautiful view of the Thames and the surrounding counties. Edward III. rebuilt the old castle, and added St George's chapel; and numerous changes were made by succeeding sovereigns, particularly by Charles II. In 1824, the dilapidated condition of the castle attracted the attention of parliament, and a grant of £300,000 was made for restoring it. Further grants, amounting in all to about £800,000, have since been required, and the whole appearance of the building has been much improved by increasing the height of the walls, inserting larger windows, &c. The castle is divided into two wards, the Upper and the Lower, with a round tower between them, called the Middle ward; the whole covering about twelve acres, and forming a hollow square, three of the outer sides of which are surrounded by a magnificent terrace. The inner court is a connected building of three sides, the fourth being formed by the Round tower, or keep. The Lower ward contains the ecclesiastical portions of the edifice, including St George's chapel. The Upper ward is formed by the round tower on the west, the state apartments, including St George's hall, on the north, and a range of domestic apartments on the east and north, communicating with the state apartments. The royal apartments on the north side of the upper court are termed the Star-building, from a star and garter in the middle of the structure. Amongst those shown to the public are the king and queen's guard-chambers, containing a fine armoury; the queen's presence-chamber, hung with tapestry representing the decapitation of St Paul; the ball-room, with tapestry depicting the months of the year; the queen's bed-chamber, in which is a state bed; the beauty-room, so called from the portraits of Charles II.'s beauties, with which it is decorated; the king's dining-room; the king's audience-chamber, embellished with paintings by West; the king's or St George's chapel, adorned with paintings by Verrio, and carving by Gibbon; and St George's hall, appropriated to the order of the garter, and containing a representation of the triumph of the Black Prince. St George's chapel, or the collegiate church of Windsor, is the largest and most elegant of the three royal chapels in England. It was founded by Edward III. but much improved by Edward IV., and afterwards by Henry VII. The interior is built in the form of an ellipsis, and the roof is supported by lofty pillars. On each side of the choir are the stalls of the sovereign and knights of the order of the garter, with their arms, banners, &c.; and in the vaults beneath are interred Henry VI., Edward IV., Henry VIII., his queen Jane Seymour, Charles I., and a daughter of queen Anne. At the east end of St George's chapel is a royal mausoleum, formerly called Wolsey's tomb-house, from that cardinal having begun a sumptuous monument here for himself. The monument was left unfinished, and the building fell to decay, till George III. formed it into a mausoleum. The remains of George III. and his wife, of his sons, George IV., William IV., the duke of York and the duke of Kent, and of the princess Charlotte, with her infant son, are deposited here. Among the recent improvements before alluded to, are the new gateway, called George the Fourth's, consisting of two towers, York and Lancaster, 100 feet high; the Octagon tower, which is higher than any other part of the building, being 120 feet above the level of the terrace; a fine gallery, connecting the Octagon tower with the Star-building, &c.

WINDSOR, the capital of Hants county, Nova Scotia, is situated on the Avon and the St Croix, just above their junction, forty-five miles north of Halifax. After the Avon receives the St Croix, it spreads into a wide frith, and afterwards flows into the basin of Minas. The rise of the Avon at Windsor is twenty feet at neap tides, and thirty at spring tides. The river at low water is only a brook. Windsor has a fine situation, and contains some of the best land in the province. Its principal commercial business arises from its gypsum. This is carried, in great quantities, to St John's, in New Brunswick, to be shipped thence to the United States. In 1828, Windsor contained a university, an academy, a court-house, a jail, and houses of worship for Episcopalians, Roman Catholics, Methodists, Presbyterians and Baptists; and 2065 inhabitants.

WINDSOR; a post-town of Windsor county, Vermont, situated on the west bank of the Connecticut, eighteen miles south of Dartmouth college. Population in 1820, 2956; in 1830, 3134.

WINDWARD ISLANDS; one of the divisions of the Caribbean islands, so called in opposition to another division of the same, called the *Leeward* islands. The Windward islands are Martinique, St Lucia, St Vincent, Grenada, Barbadoes and Tobago. The name is, however, differently applied by different writers.

WINDWARD PASSAGE; a name given to a course from the south-east angle of the island of Jamaica, extending 160 leagues, to the north side of Crooked island, in the Bahamas.

WINE; liquor that has become spirituous by fermentation. The invention of wine is involved in the obscurity of fable; but it must be referred to very remote times. The first portion of the

fruit of the vine which had been pressed by accident or design, and allowed to remain a short time undisturbed, would be found to have assumed new and surprising properties; and the method of preserving for constant use the beverage thus obtained would soon be learned. The Egyptians attributed the invention to Osiris, the Greeks to Bacchus, and the Latins to Saturn. Wine was in common use, from an early period, among the Hebrews; but the use of it was, for a long time, forbidden in Rome, and, even at a later period, was not allowed to women. The Greeks and Romans poured out libations to the gods upon the ground or table; and the custom of drinking to the health of distinguished persons, or absent friends, also prevailed in both nations. See *Feasts of the Ancients.*

The vine does not thrive except between 35° and 50° of latitude; in higher latitudes, the grape seldom arrives at maturity, and the wine is weak, liable to sour, and destitute of the generous flavour which characterizes that produced in more favourable regions. In warmer climates, the saccharine matter predominates, and a complete decomposition cannot be effected.

The grape in some countries is cut off the plant with a knife; in France, the scissors is used, by which the stems of the branches are rapidly severed. In ruder countries, the hand only is applied, a mode injurious to the grape as well as to the vine. The most approved plan is to make three separate gatherings of the fruit. The *first* includes all the finest and ripest bunches. The green, rotten grapes, or such as have been eaten into by insects, are cleared from the bunches, which are then carefully carried home. The *second* gathering implies naturally a second pressing. The grapes are not quite as ripe as the first. The *last* gathering and pressing consists of the inferior grapes. The gathered bunches are deposited as lightly as possible, to prevent the grapes from being bruised. All dry or spoiled grapes are cast aside, where proper care is used, as fine or delicate wine is intended to be made. Each labourer places his gathering in an ozier basket, or in a sort of wooden dosser, carried with the least possible motion. In France, in the department of the Marne, the grapes are carried on horseback covered with cloths. The grapes in some countries are plucked from the bunches; in others, they are placed entire in the press, stems and all. The best grapes only are used for making the better kinds of wine. The astringent principle lodged in the stems is thought to be beneficial, and to impart to the wine a capacity of endurance or long keeping. When picked, it is only for red wine, and is generally done by the hand. White-wine grapes are rarely picked from the clusters.

Grapes were anciently trodden out, after being exposed on a level floor, to the action of the solar rays for ten days; they were then placed in the shade for five days more, in order to mature the saccharine matter. This practice is still followed in some of the islands of the Greek Archipelago, at St Lucar, in Spain, in Italy, at least in Calabria, and in some of the north-eastern departments of France. The fermentation is facilitated greatly by this process. In some parts of France, a labourer with sabots treads the grapes out as they come from the vineyard in a square box, having holes in the bottom and placed over a vat—a very barbarous method. The murk is then removed, and he proceeds with fresh grapes till the vat is full. Sometimes they are squeezed out in troughs, by naked men, using both sabots and hands at once.

The wine press differs in construction in different countries. There are several kinds. For red wine, the grapes are trodden before they are pressed, in order to disengage the colouring matter from the skins; but in making white wine, this operation is never performed. In either case, where the press is applied, the first pressing is dispatched as quickly as possible. At first the press is used gently, that the wine may not overflow. The pressure is then gradually increased, until the murk becomes moderately compressed. This is the first pressing. The grapes that did not sustain pressure, being scattered over the edges of the heap, are now gathered up, the press relaxed, and being placed upon the murk, the press is tightened again. The wine from this is called of the second pressing. The edges of the whole mass are now squared down with a cutting instrument, so that the mass of fruit is reduced to the form of an immense oblong cake, upon which the cuttings of the edges are heaped, and the press worked again, which makes wine of the third pressing, or, as the wine-maker calls it, *wine of the first cutting.* The pressing and cutting are repeated two or three times, and what liquid flows after is called among the labourers wine of the second or third cuttings. There is only one species of wine which is made without beating, treading, or pressing; this is what they call in Spain *lagrima.* The grapes, melting with ripeness, are suspended in bunches, and the wine is the produce of the droppings. This can only be effected with the *muscatel* grape of the warm south. In this way the richest Malaga is made. In Cyprus the grapes are beaten with mallets, on an inclined plane, with a reservoir at the end.

The juice of the grape, when newly expressed, and before it has begun to ferment, is called *must,* and, in common language, *sweet wine.* It is turbid, has an agreeable and very saccharine taste, and is very laxative. When the must is pressed from the grapes, and put into a proper vessel and place, with a temperature of between 55° and 60°, a gradual fermentation ensues. Bubbles of carbonic acid gas (fixed air) rise to the surface, bringing along with them the skins, stones, and other grosser matters of the grapes, and which form a scum, or soft spongy crust, that covers the whole liquor. After a time, the crust becomes stiff, is broken in pieces by the ascending gas, and falls to the bottom of the liquor. When this takes place, if we would secure a good and generous wine, all sensible fermentation must be checked. This is done by putting the wine into close vessels, and carrying these into a cellar or other cool place. The wine produced by this first fermentation differs entirely and essentially from the juice of grapes before fermentation. Its sweet and saccharine taste is changed into one that is very different, though still agreeable and somewhat spirituous. It has not the laxative quality of must, but affects the head, and, if taken immoderately, occasions drunkenness; and, when distilled, it yields, instead of the insipid water obtained from must, genuine alcohol. When any liquor undergoes the spirituous fermentation, all its parts seem not to ferment at the same time, otherwise the fermentation would probably be very quickly completed, and the appearances would be much more striking; hence, in a liquor much disposed to fermentation, this motion is more quick and simultaneous than in another liquor less disposed. Ex-

perience has shown that a wine, the fermentation of which is very slow, is never good, and, therefore, when the weather is too cold, the fermentation is accelerated by heating the place in which the wine is made. A too hasty and violent fermentation is also hurtful, from the dissipation and loss of some of the spirit. However, we may distinguish, in the ordinary method of making wines of grapes, two periods in the fermentation, the first of which lasts during the appearance of the sensible effects above alluded to, in which the greatest number of fermentable particles ferment. After this first effort of fermentation, these effects sensibly diminish, and ought to be stopped for reasons hereafter to be mentioned. The fermentative motion of the liquor then ceases. The heterogeneous parts, that were suspended in the wines by this motion, and render it muddy, are separated, and form a sediment called *lees*, after which the wine becomes clear. But though the operation is then considered as finished, and the fermentation apparently ceases, it does not really cease; and it ought to be continued in some degree if we would have good wine. In this new wine, a part of the liquor probably remains that has not fermented, and which afterwards ferments, but so very slowly, that none of the sensible effects produced in the first fermentation are here perceived. The fermentation, therefore, still continues in the wine, during a longer or shorter time, although in an imperceptible manner; and this is the second period of the spirituous fermentation, which may be called the imperceptible fermentation. The effects of this fermentation are the gradual increase of the quantity of alcohol, and of the separation of the acid salt, called *tartar*, from the wine. As the taste of tartar is harsh and disagreeable, it is evident that the wine, which, by means of the insensible fermentation, has acquired more alcohol, and has disengaged itself of the greater part of its tartar, ought to be much better and more agreeable; and for this reason chiefly old wines are universally better than new. But insensible fermentation can only ripen and meliorate the wine if the sensible fermentation have regularly proceeded, and been stopped in due time. We know certainly that, if a sufficient time have not been allowed for the first period of the fermentation, the unfermented matter that remains, being in too large a quantity, will then ferment in the bottles, or close vessels, in which the wine is put, and will occasion effects so much more sensible as the first fermentation shall have been sooner interrupted; hence these wines are always turbid, emit bubbles, and sometimes break the containing vessels, from the large quantities of air disengaged during the fermentation. We have an instance of these effects in the wine of Champagne, and in others of the same kind: the sensible fermentation of which is interrupted, or rather suppressed, that they may have this sparkling quality. It is well known that these wines make the corks fly out of the bottles; that they sparkle and froth when they are poured into glasses; and lastly, that they have a taste much more lively and piquant than wines that do not sparkle; but this sparkling quality, and all the effects depending on it, are only caused by a considerable quantity of carbonic acid gas, which is disengaged during the confined fermentation that the wine has undergone in close vessels. This air, not having an opportunity of escaping, and of being dissipated as fast as it is disengaged, and being interposed betwixt all the parts of the wine, combines, in some measure, with them, and adheres in the same manner as it does to certain mineral waters, in which it produces nearly the same effects. When this air is entirely disengaged from these wines, they no longer sparkle, but lose their brisk taste, and become insipid. Such are the qualities which wine acquires, in time, when its first fermentation has not continued sufficiently long. These qualities are given purposely to certain wines to indulge taste or caprice; but they are not regarded as suited to daily use. Wines for daily use ought to have undergone so completely the sensible fermentation, that the succeeding fermentation shall be insensible, or, at least, very nearly so. Wine, in which the first fermentation has been too far advanced, is liable to worse inconveniences than that in which the first fermentation has been too quickly suppressed; for every fermentable liquor is, from its nature, in a continual intestine motion, more or less strong, according to circumstances, from the first instant of the spirituous fermentation, till it is completely purified; hence from the time of the completion of the spirituous fermentation, or even before, the wine begins to undergo the acid or acetous fermentation. This acid fermentation is very slow and insensible, when the wine is included in very close vessels and in a cool place; but it gradually advances, so that in a certain time the wine becomes completely sour. This evil cannot be remedied, because the fermentation may advance, but cannot be reverted. Wine merchants, therefore, when their wines become sour, can only conceal or remove this acidity by alkalies or alkaline earths. But these additions communicate to wine a dark, greenish colour, and a taste which, though not acid, is somewhat disagreeable. Besides, calcareous earths accelerate, considerably, the total destruction and putrefaction of the wine. Oxides of lead, having the property of forming with the acid of vinegar, a salt of an agreeable saccharine taste, which does not alter the colour of the wine, and which, besides, has the advantage of stopping fermentation and putrefaction, might be employed to remedy the acidity of wine, if lead and all its preparations were not pernicious to health, as they occasion most terrible colics, and even death, when taken internally. If wine contain oxide of lead, it may be discovered by transmitting through a portion of it, in a wine-glass, a current of sulphureted hydrogen gas, which will cause a glistening, black precipitate of sulphuret of lead. See *Fermentation*, and *Vinegar*.

When the wine has attained a sufficient degree of maturity, it is freed from the lees, by being *racked*, as it is termed, into a clean cask; and, in order to prevent a renewal of the fermentation, it is subjected to the operation of sulphuring. This process is generally performed by means of sulphur matches, applied to the cask into which the wine is to be racked, and should the fermentation still continue, must be renewed as often as is necessary. Sometimes must, strongly impregnated with sulphurous acid gas, is added to the wine, and answers the same purpose. After sulphuring, the greater proportion of wines require to be further clarified, or fined, before they attain a due brightness. For this purpose, various substances are used, which, by their chemical or mechanical action, unite with such materials as disturb the purity of the wine, and precipitate with them to the bottom. The substances in general use are isinglass and the white of eggs; but, as these are of a putrescent

nature, gum Arabic has been used instead of them. In Spain, the white wines are sometimes clarified with fuller's earth: powdered marble, gypsum, heated flints, beech-wood chips, sand, &c., are also used.

When the wine has thus been prepared, it is almost always *medicated*, as it is called, before it is ready for the market; and very little wine is, in fact, a simple or natural liquor. One of the most common processes of medication is mixing different wines together, sometimes of the same quality or country, but often of different ones. For this purpose, that season is chosen in which the wines show a disposition to renew their fermentation. They are then said to *bear the fret;* and the operation is called *fretting-in*. The mixing different wines always disturbs both, so that they tend to ferment again; and when the fermentation is determined, they form a proper compound. In the wine countries, particular grapes (rough, or coloured, or astringent, or high-flavoured) are cultivated for the mere purpose of mixing their juice with that of others. Another process is that of mixing brandy with the natural liquor. The tendency of this substance, thus mixed, is to decompose the wines in process of time, causing the extractive matter, or mucilage, to be deposited, as well as the colour, and, at the same time, to destroy their lightness and flavour. Few wines naturally possess much flavour; and the same is true, to a great degree, of colour. It is therefore a part of the business of the manufacturer to communicate, artificially, such a flavour and colour as the taste of the customer demands. This result is obtained in various ways, some of which continue a secret. The flavour, however, is often generated by the application of bitter almonds, oak chips, orris-root, wormwood, rose-water, &c., while colour is produced by the use of dye-woods, logwood, &c., berries, oak chips, burnt sugar, iron, &c. Both processes require to be managed with great delicacy and skill.

Wines are red, when the black grape, with its skin, has been used, and of more or less yellowish-white colour, when the white grape, or even when the black grape, freed of its skin, has been employed. Wines, with respect to their properties, may be divided into three principal divisions, viz., 1. the *astringent* or *dry wines;* such are those of Alicant, Bordeaux, Burgundy, Sherry, Madeira, &c. These wines contain a small quantity of tannin, which gives them a taste more or less harsh. 2. The *sweet wines*, such are Malaga, Rota, Rivesaltes, Lunel, &c., containing a tolerably large quantity of sugar, which has escaped fermentation. And, 3. the *foaming* or *sparkling wines*, such as champagne, which, being bottled up before they have undergone a perfect fermentation, contain a large quantity of carbonic acid gas in solution. All the wines give, on analysis, very nearly the same products, viz. water, alcohol, a little mucilage, colouring principles, supertartrate of potassa, tartrate of lime, acetic acid; and some of them contain, besides, carbonic acid; finally, a very volatile principle, which has not as yet been isolated, and to which the peculiar flavour or *bouquet* of the wine has been attributed. To the presence of alcohol they are principally indebted for their stimulant and diffusible properties; and this principle, which may be separated by distillation, exists in them in very different proportions, as may be perceived by the following table, drawn up by Mr Brande:—

*Names of the Wines, Malt and Spirituous Liquors, and the Proportion of Alcohol (specific gravity 0·825) in one hundred Parts of these Liquids by Measure.*

| | |
|---|---|
| Lissa (average) | 25·41 |
| Marsala (average) | 25·09 |
| Port (average) | 23·39 |
| Madeira, and red or Burgundy Madeira (average) | 22·27 |
| Xeres or Sherry (average) | 19·17 |
| Teneriffe | 19·79 |
| Lachryma Christi | 19·70 |
| Constantia (white) | 19·75 |
| Ditto (red) | 18·92 |
| Lisbon | 18·94 |
| Cape Muscat | 18·25 |
| Roussillon (average) | 18·13 |
| Malaga | 17·26 |
| Hermitage (white) | 17·43 |
| Malmsey Madeira | 16·40 |
| Lunel | 15·52 |
| Bordeaux wine or claret (average) | 15·10 |
| Sauterne | 14·22 |
| Burgundy (average) | 14·57 |
| Nice | 14·63 |
| Champagne (still) | 13·80 |
| Ditto (sparkling) | 12·61 |
| Red Hermitage | 12·32 |
| Vin de Grave | 13·37 |
| Frontignac | 12·89 |
| Cote rotie | 12·32 |
| Rhenish wine (average) | 12·08 |
| Tokay | 9·88 |
| Gooseberry wine | 11·84 |
| Cider (highest average) | 9·87 |
| Ditto (lowest ditto) | 5·21 |
| Mead | 7·32 |
| Ale (average) | 6·87 |
| Brown stout | 6·80 |
| Porter (average) | 4·20 |
| Small beer | 1·28 |
| Brandy | 53·39 |
| Rum | 53·68 |
| Gin | 51·60 |
| Whiskey | 54·32 |
| Irish ditto | 53·90* |

The action of wines upon the animal economy depends principally upon the quantity of alcohol they contain. However, a certain given quantity of wine does not act in the same way as a mixture of alcohol and water in the same proportions; and certain wines, yielding on distillation very nearly the same proportion of alcohol, do not inebriate with the same facility. This difference must be ascribed to the various kinds of combinations in which alcohol exists in these complex products. Astringent wines act as tonics and stimulants; and the sparkling wines, which act so promptly and so powerfully on the brain, notwithstanding the small proportion of alcohol they contain, exercise likewise a very decided diuretic influence.

In regard to the dietetic or medical qualities of the different sorts of wines, we copy the following observations from Henderson's valuable work (History of Wines, quarto, 1824), from which we have borrowed largely in compiling this article. "1. Among the brisk wines, champagne may be considered the best, and is the least noxious, even when drunk in considerable quantity. The wines of

* Upon this subject Henderson remarks, that some of the wines analysed by Brande, were mixed with a considerable quantity of adventitious alcohol, and furnishes the following additions and corrections:—

| | |
|---|---|
| Lissa | 15·90 |
| Claret | 12·91 |
| Constantia | 14·50 |
| Marsala | 18·40 |
| Rhenish | 7·36 |
| Johannisberger | 8·71 |
| Rudesheimer (1811) | 10·72 |
| Ditto (1800) | 12·22 |

Many of these wines are, indeed, artificially compounded; but it is their artificial strength that it is most desirable to understand, because they are rarely found in a natural state. It should be also observed that much of the wine here analysed is brandied expressly for the taste of the British market, where, as observed, we rarely receive it in a purer condition.

Champagne intoxicate speedily, probably in consequence of the carbonic acid in which they abound, and the volatile state in which their alcohol is held; and the excitement is of a more lively and agreeable character, and shorter duration, than that which is caused by any other species of wine, and the subsequent exhaustion less. Hence the moderate use of such wines has been found, occasionally, to assist the cure of hypochondriacal affections and other nervous diseases, where the application of an active and diffusible stimulus was indicated. The opinion which prevails that they are apt to occasion the gout, seems to be contradicted by the infrequency of that disorder in the province where they are made; but they are generally admitted to be prejudicial to those habits in which that disorder is already formed, especially if it has originated from addiction to stronger liquors. With respect to this class of wines, however, it is to be observed that they are drunk too often in a raw state, when, of course, they must prove least wholesome; and that, in consequence of the want of proper cellars, and other causes which accelerate their consumption, they are very rarely kept long enough to attain their perfect maturity. It is also worthy of notice, that, in order to preserve their sweetness, and promote effervescence, the manufacturers of champagne commonly add to each bottle a portion of sirup, composed of sugar-candy and cream of tartar, the highly frothing kinds receiving the largest quantity. Therefore, contrary to the prevailing opinion, "when the wine sparkleth in the glass, and moveth itself aright," it is most to be avoided, unless the attributes of age should countervail all its noxious properties. 2. The red wines of Burgundy are distinguished by greater spirituosity, and a powerful aroma. Owing, perhaps, to the predominance of the latter principle, they are much more heating than many other wines which contain a larger proportion of alcohol. The exhilaration, however, which they cause, is more innocent than that resulting from the use of heavier wines. The better sorts may be sometimes administered with advantage in disorders in which stimulant and subastringent tonics are required. The same observation will apply to the wines of the Rhone, and the lighter red wines of Spain and Portugal. 3. Possessing less aroma and spirit, but more astringency, than the produce of the Burgundy vineyards, the growths of the Bordelais are perhaps, of all kinds, the safest for daily use, as they rank among the most perfect light wines, and do not excite intoxication so readily as most others. They have, indeed, been condemned by some writers as productive of gout, but, I apprehend, without much reason. That with those people who are in the practice of soaking large quantities of Port and Madeira, an occasional debauch in claret may bring on a gouty paroxysm, is very possible; but the effect is to be ascribed chiefly to the transition from a strong brandied wine to a lighter beverage—a transition almost always followed by a greater or less derangement of the digestive organs. Besides, we must recollect, that the liquor which passes under the denomination of claret is generally a compounded wine. It is therefore unfair to impute to the wines of the Bordelais those mischiefs which, if they do arise in the manner alleged, are probably, in most instances, occasioned by the admixture of other vintages of less wholesome quality. 4. The wines of Oporto, which abound in the astringent principle, and derive additional potency from the brandy* added to them previously to exportation, may be serviceable in disorders of the alimentary canal, where gentle tonics are required. But the gallic acid renders them unfit for weak stomachs; and what astringent virtues they show will be found in greater perfection in the wines of Alicant and Rota, which contain more tannin and less acid. The excitement they induce is of a more sluggish nature than that attending the use of the purer French wines, and does not enliven the fancy in the same degree. As a frequent beverage, they are unquestionably much more pernicious. 5. For a long time, the vintages of Spain, and particularly the sacks, properly so called (see *Sack*), were preferred to all others for medicinal purposes. The wines of Xeres (Sherry) still recommend themselves by the almost total absence of acidity. 6. Of all the strong wines, however, those of Madeira, when of good quality, seem the best adapted to invalids; being equally spirituous as Sherry, but possessing a more delicate flavour and aroma, and, though often slightly acidulous, agreeing better with dyspeptic habits. Some have thought them beneficial in cases of atonic gout, probably without much cause; for whenever a disposition to inflammatory disorders exists, the utility of any sort of fermented liquors is very doubtful. 7. The light wines of the Rhine, and those of the Moselle, are much more refrigerant than any of the preceding, and are frequently prescribed, in the countries where they grow, with a view to their diuretic properties. In certain species of fever, accompanied by a low pulse and great nervous exhaustion, they have been found to possess considerable efficacy, and may be given with more safety than most other kinds; as the proportion of alcohol in them is small, and its effects are moderated by the presence of free acids. They are also said to be of service in diminishing obesity. 8. It is difficult to conjecture on what circumstances the ancients founded their belief in the innocuous qualities of sweet wines, contrasted with the drier and more fully fermented kinds. They may not intoxicate so speedily, and, as they cloy sooner upon the palate, are perhaps generally drunk in greater moderation. When new, they are exceedingly apt to disorder the stomach; and when used too freely, they produce all the same effects as the heavier dry wines. In their more perfect state, they may answer the purpose of agreeable and useful cordials; but, as the excess of saccharine matter retards their stimulant operation, they ought always to be taken in small quantities at a time."

*Wines, Ancient and Modern.* Our limits will only permit us to touch upon this part of the subject. Among the Greeks and Romans, the sweet wines were those most commonly in use; and, in preparing their wines, the ancients often inspissated them until they became of the consistence of honey, or even thicker. These were diluted with water previously to their being drank; and, indeed, the habit of mixing wine with water seems to have prevailed much more in antiquity than in modern times. Among the principal Greek wines, the Maronean and Ismarian were of Thracian growth; the Pramnian, of uncertain growth, was a strong, hard, astringent liquor, resembling Port; but the luscious sweet wines are the favourite topics of the Grecian drinking songs. They were chiefly the products of the Ionian and Ægean isles. The Chian was famous for its exquisite aroma, the Leshian for

* These remarks are more particularly applicable to the Port intended for the British market.

its delicious flavour, and the Thasian was a generous sweet wine, acquiring by age a delicate odour of the apple. The Ariusian or Arivisian, and the Phanean, called by Virgil the king of wines, were products of Chios. Besides these and other indigenous growths, several African and Asiatic wines enjoyed a high reputation among the Greeks. The Bithynian wines were of the choicest quality: the wines of Byblos, in Phœnicia, vied in fragrancy with the Lesbian: the white wines of Mareotis and Tænia, in Egypt, were also famous for their delicate perfume. The finest wines used by the Romans were the produce of Campania (q. v.), which formed one continued vineyard. The Cecuban was a generous, light wine, but apt to affect the head, and ripening only after a long term of years. The Falernian, according to Henderson, was a strong, durable wine, being, when new, rough, harsh and fiery, and requiring to be kept a long time, before it attained a due degree of mellowness. The Setina was a delicate, light wine, the favourite of Augustus, but not even mentioned by Horace, who had a decided predilection for the strong wines. The Massican appears to have been a species of Falernian. The Calenum, Caulinum and Statanum were also highly prized by the Romans. The Albanian, when properly matured, was an excellent dry wine. Among the lighter growths of the Roman territory, the Sabine, Nomentan, Venafran and Spoletan were among the most agreeable. The Mamertine, a light and slightly astringent wine, and the Pollian, a sweet wine, were among the growths of Sicily. Spanish and Gallic wines were also used by the Romans, as well as the eastern growths. The richer wines were reserved by the ancients for the dessert; and among the Greeks the most esteemed dessert wines were the Thasian and Lesbian; among the Romans, the Cecuban, Albanian and Falernian of native growths, and, when they had become acquainted with the products of foreign countries, the Chian and Lesbian. Of the principal modern wines we have already spoken at considerable length under the separate heads. (See *Burgundy, Bordelais, Champagne, Rhenish, Moselle, Hungarian, Sherry, Port,* &c.) Madeira, so called from the island which produces it, is much used in this country. There is a great difference in the flavour and other qualities of the Madeira wines: the best are produced on the south side of the island: they may be kept for a very long period, and, as is well known, are often sent long voyages in warm climates, to mellow them. They are naturally very strong, but commonly receive an addition of brandy when racked off. The Madeira wines retain their qualities unimpaired in both extremes of climate, suffering no decay, and constantly improving as they advance in age. Indeed, they are not in condition until they have been kept for ten years in wood, and afterwards allowed to mellow nearly twice that time in bottle; and even then they will hardly have reached the utmost perfection of which they are susceptible. When of good quality, and matured as above described, they lose all their original harshness, and acquire that agreeable pungency, that bitter sweetishness, which was so highly prized in the choicest wines of antiquity, uniting great strength and richness of flavour with an exceedingly fragrant and diffusible aroma. The nutty taste, which is often very marked, is not communicated, as some have imagined, by means of bitter almonds, but is inherent in the wine.

WING. The wings of birds correspond to the fore legs of quadrupeds and the arms of man. The clavicle of birds is a hollow tube of great strength, and the fork is peculiar to winged animals. The different bones of the wing are bound together, and connected with the bones of the body, by strong ligaments; and the muscles by which motion is communicated to them are the most powerful with which the animal is provided. All this peculiar apparatus is necessary to give due force to these instruments of locomotion. The construction and disposition of the feathers are not less curious, and admirably adapted for the purpose of flying. (See *Feather*, and *Ornithology*, for many details on this subject.) The best form of windmill sails, which human ingenuity and science have been able to devise, bears a striking resemblance to the arrangement of the feathers in the wings of birds, and is one of many beautiful instances of the mathematical exactness of the principles on which the works of creation are constructed. The form of the wings is most accurately adapted to the habits of the birds. There are two forms, which have received the names of the *rudder-formed* and the *sail-formed* wings: the former are long, slim and tapering, as in the falcons, swallows, &c.; the latter broad, long, and rounded at the end, as in the swan, goose, &c. The former are for quick, sudden and rapid motion, and are moved often; the latter for floating a long time more slowly through the air.—The wings of insects are membranous, elastic, for the most part transparent, and traversed by firm air-vessels, which sometimes form a beautiful network. In some they are naked; in others, as in the butterflies, they are covered with fine, soft, feathery scales: in some they are extended and straight; in others folded. Some insects have four wings, and others but two: the latter are commonly provided with poisers or balancers (*haleres*). The difference in the structure and disposition of the wings is one of the distinctive marks on which the division of insects into orders is founded: thus we have the *hemiptera*, the *coleoptera*; the *lepidoptera*, the *neuroptera*, &c. (See *Insects*, and *Entomology*.) —Quadrupeds which fly are provided with membranes extending over the bones of the extremities, by which they are enabled to impel themselves through the air (see *Bat*); others merely have the skin so loose on the sides as to be spread out when the limbs are extended; and, being buoyed up in this manner, they are able to make surprising leaps. (See *Squirrel*.)—The desire of flying seems to have haunted men from the earliest times, and has given rise to many attempts to accomplish this object by means of artificial wings. The fable of Dædalus and Icarus shows how old this idea is; and many attempts have been made, in modern times, to carry it into execution, but without success. Degen, an ingenious watch-maker of Vienne, succeeded in sustaining himself in the air by means of artificial wings; and he went to Paris, in 1813, to exhibit his accomplishment; but he failed entirely in obtaining any command over them. Borelli (*De Motu Animalium*, Rome, 1680) has fully demonstrated, from a comparison of the muscles of man with those of birds, that artificial wings attached to the human body, could not be employed for this purpose. It is by no means impossible, however, that they might be applied to produce motion through the air, by being connected with some sort of cars, and set in motion by steam.

WINGED in botany; a term applied to such

stems of plants as are furnished, all their length, with a sort of membranaceous leaves, as the thistle, &c.—Winged leaves are such as consist of divers little leaves ranged in the same direction, so as to appear only as the same leaf. Such are the leaves of agrimony, acacia, ash, &c.—Winged seeds are such as have down or hairs on them, which, by the help of the wind, are carried to a distance.

WINGS, in military affairs, are the two flanks or extremes of an army, ranged in order of battle. —*Wings*, in fortification, denote the longer sides of horn-works, crown-works, tenailles, and the light out-works, including the ramparts and parapets, with which they are bounded on the right and left from their gorge to their front.

WINGOLF. See *Northern Mythology.*

WINKELRIED, Arnold von; a knight of the Swiss canton of Underwalden, who, in the battle at Sempach, July 9, 1386, by the sacrifice of his life, enabled his countrymen to defeat the troops of Leopold, duke of Austria. The long lances of the latter frustrated the efforts of the Swiss to break their ranks. Many of the Swiss had already fallen, when Arnold von Winkelried called out to his comrades, "I will make a lane for you: faithful dear confederates, think of my family,"—then exclaiming, "Make way for Liberty!" he rushed on the enemy, grasped several lances, and, heedless of the thrusts, bore them to the ground. His countrymen followed through the opening which he had made, and won the battle of Sempach. The Swiss, on the anniversary of this day, celebrate a national festival, in honour of Winkelried, and those who fell with him. See Müller's *History of Switzerland.*

WINKLER, John Henry, the son of a miller in Lusatia, was born in 1703, studied at the university of Leipsic, from 1731 to 1739, was a teacher in a school in that city, in 1737, delivered lectures on experimental philosophy, natural theology, &c., and was afterwards appointed professor of philosophy in the university. In 1741—1745, he published a work on the souls of animals. In 1742, he was appointed professor of Greek and Latin, and published some philological works. He subsequently exchanged this professorship for that of natural philosophy, and published various works in this branch. Winkler and Hausen, professor of mathematics in Leipsic, did much to make the properties of electricity known in Germany, after public attention had been directed to the subject in England and France, about 1740, by William Gilbert. Winkler improved the electrical machines; and his Inquiries into Electricity were translated into English. He was chosen a member of the royal society, and was the first person in Germany who suggested the use of lightning-rods, in his dissertation *De avertendi Fulminis Artificio ex Doctrina Electricitatis* (1753), in which he alludes to Franklin's discoveries. He died in 1770.

WINNIPECK, or WINNIPEG; a lake of North America, 240 miles long, and from 5 to 60 in breadth; lon. 95° 48′ to 99° 12′ west; lat. 50° 22′ to 53° 57′ north. It communicates on its west side, with Little Winnipeck lake, by Dauphin river, St Martin's lake, and Wetarhen river. On the south side, it receives the Assiniboin or Red river; and on the south-west it receives Winnipeck river. At this point the British fur companies have forts. The country around the lake is low, covered with timber, and the soil is pretty good. Wild rice grows in abundance.

WINNIPISEOGEE; a lake of America, in New Hampshire, east of the centre; lon. 71° 5′ to 71° 25′ west; lat. 43° 29′ to 43 44′ north. It is twenty-three miles long, and ten broad. It receives several small streams, and its waters are conveyed off by Winnipiseogee river, which joins the western branch of the Merrimack at Sanborton, opposite Salisbury. This lake is 472 feet above the ocean, and 232 above Merrimack river. It is very deep, and in some parts is unfathomable by any means possessed by the inhabitants. Its waters are very pure, and abound with fish. Its form is very irregular, and it contains 365 islands. Some of these are large enough for extensive farms. The scenery connected with this lake is said to be superior to any thing else of the kind in the United States. A pleasing description of it has been given by doctor Dwight in his Travels.

WINTER (from wind, on account of the prevalence of storms at this season; so with the Greeks *χειμων* from *χεω*, to pour, and with the Romans, *hyems*, from *ὑω*, to rain, because in the more southern climates of the northern hemisphere it is a rainy season); the coldest season of the year, which begins astronomically on the shortest day (December 22), and ends with the vernal equinox (March 21). In the southern hemisphere, it is of course winter when it is summer with us. (See *Summer.*) In our hemisphere, the winter is but eighty-nine days, while, in the southern hemisphere, it is ninety-three days; our winter occurring during the earth's parhelion, and the winter of the southern hemisphere during its aphelion, when its motion in its orbit is slower. (See *Seasons.*) The coldness of winter is owing, therefore, to the shortness of the days, or time during which the sun is above the horizon, and the oblique direction in which his rays fall upon our part of the globe at that season. In the torrid zone, there is no winter, in our sense of the word; but a rainy season, without ice, snow, or frost, takes its place. (See *Climate* and *Temperature.*) This remark is also true of countries bordering on the tropical regions, to a considerable distance north and south.

WINTER SOLSTICE. See *Solstice.*

WINTER, John William de, vice-admiral, was born in 1750, in Texel. At the age of twelve years, he entered the navy. In 1787, when the revolution broke out in Holland, De Winter was a lieutenant, and embraced with ardour the cause of the patriots; which circumstance obliged him to take refuge in France, when the party of the stadtholder prevailed. In France, he entered the army and served, in 1792 and 1793, under Dumouriez and Pichegru, and soon rose to the rank of general of brigade. In 1795, when Pichegru invaded Holland, De Winter returned to his country, where the states-general offered him the rank of rear-admiral. The year following, he was made vice-admiral and commander of the naval forces at Texel. Having been blockaded here for a long time, he at last succeeded in evading the vigilance of the enemy, and, October 7, 1797, set sail with twenty-nine vessels, of which sixteen were ships of the line. The English fleet consisted of twenty ships of the line, and about fifteen frigates, and other vessels, under Admiral Duncan. The action began October 11, and was maintained about three hours with equal spirit on both sides. De Winter's ship was at last taken, and he was carried on board the vessel of the British admiral. The Dutch lost nine ships of the line, taken or sunk, and about

six hundred men killed, and eight hundred wounded. The loss of the British was also severe: some British vessels were sunk. De Winter received in England the honour due to his courage and talents. He was exchanged some months after; and a court-martial declared that he had gloriously sustained the honour of the Batavian republic. In 1798, he was sent, as minister of his republic, to that of France, where he remained in this capacity until 1802, when he received the command of an expedition intended to act against Algiers. He cruised for some months on the Barbary coast, and at last concluded a treaty with Tripoli. Louis Bonaparte, when king of Holland, made De Winter commander-in-chief of all the forces by sea and land. When Holland was united with France, Napoleon made him grand-officer of the legion of honour, and general-superintendent of the coasts of the North sea. In July, 1811, he gave him the command of the forces assembled at the Texel; but the fatigues of his new station ruined his health. He went to Paris, where he died June 2, 1812. His remains were deposited in the Pantheon.

WINTER, Peter von, a distinguished composer of vocal music, was born at Manheim, in 1754, and was the son of a soldier. At the age of ten years, he was appointed a member of the orchestra of the elector. In 1775, he was director of the orchestra at Manheim, and subsequently at Munich. In 1780, he went to Vienna. In 1782, his first opera, Helen and Paris, was performed at Munich. In 1790, he went to Italy, where he was received with great favour. The first opera which he wrote in Italy was Cato in Utica, first performed in Venice in 1791. In 1795 and 1796, he went to Prague and Vienna. At the latter place, he wrote his most celebrated opera, the Sacrifice Interrupted. In 1802, he visited France and England. In Paris, he composed Tamerlane; in London, Calypso, Castor and Pollux, Proserpine and Zaire. He also composed many pieces of church music, among which the requiem for the funeral of Joseph II. is distinguished; also a *Miserere*. Among his profane cantatas, his Timotheus, or the power of Tones, is particularly famous. He died in 1825, at Munich. His operas, oratorios, and other pieces of vocal and instrumental music, are too numerous to be given here.

WINTERBURGER, John, established the first printing-press in Vienna, and cast the types himself. During seventeen years, he worked alone, but subsequently took an assistant. He published numerous editions towards the end of the fifteenth and beginning of the sixteenth centuries; but the copies have become very rare.

WINTERFELDT, Hans Charles von, a general of Frederic the great, was born in 1707, and entered the service in his sixteenth year. Frederic made him a major and his aid-de-camp, after his accession to the throne. In 1740, he was sent to Petersburg to prevent the Russian cabinet from taking part in the first Silesian war. He returned to the army, distinguished himself at Glogau and Mollwitz, and was made colonel. After his victory over the Hungarians at Schlawentiz, April 11, 1745, he was made major-general. He took part in the principal battles of that war. Previous to the third Silesian war, certain papers had been obtained from the archives of Dresden, by the treachery of a clerk. These disclosed the projects of Frederic's enemies; and, in consequence of Winterfeldt's advice, the king anticipated his enemies by the immediate commencement of hostilities. He was subsequently made lieutenant-general, and distinguished himself in many battles in the seven years' war. In September 1757, he was wounded near Görlitz, and died the next morning. His life, by his son, appeared at Leipsic in 1809.

WINTHROP, John, governor of the colony of Massachusetts, was born at Groton, in the county of Suffolk, England, in 1587, and went to Massachusetts in 1630, having been previously chosen governor. He continued to be re-elected, with the intermission of a few years, until his death, in 1649. His Journal contains an accurate account of events in the infant colony, from its foundation to the year of his death. The two first books were published in 1790; but the third, which was for a long time lost, first appeared in the edition of 1826 (Boston, 2 vols., 8vo.), under the care of J. Savage, who has enriched the work with valuable notes. His son, John, born in England, in 1605, and educated at Cambridge, was a fellow of the royal society, and governor of the colony of Connecticut. He was the friend of Boyle, Wilkins, and other learned men, and one of the founders of the royal society, to the Transactions of which he contributed several papers. He died in 1676. A son of the latter, Fitz-John, (born 1638, died 1707), was also governor of Connecticut, and member of the royal society.

WIPPERTHAL, or VALLEY OF THE WIPPER, on the right bank of the Prussian province of Juliers-Cleves-Berg, is one of the most industrious parts of Germany. Since 1816, the population and industry of this valley have much increased. Here Elberfeld, Gemark, Upper and Lower Barmen, Wipperfeld and Rittershausen form an almost uninterrupted town, with beautiful buildings and manufactories, and more than 40,000 inhabitants.

WIRE-DRAWING is the art of drawing out any of the ductile metals into long and regular threads of a uniform diameter, and of any size and shape. (See *Ductility* and *Divisibility*.) The process of wire-drawing is extremely simple, the apparatus employed consisting only of a draw-plate and a draw-bench. The draw-plate is a thick plate of fine steel, perforated with holes of various sizes, from that of the largest to that of the smallest wire required. These holes are punched in the plate, while hot, by well-pointed punches of German steel, and differ in diameter by almost imperceptible gradations. The draw-bench consists of a horizontal roller or axis turned by levers. A strap or chain is coiled round the roller, and at the end of the strap is a pair of pincers for taking hold of the end of the piece of metal to be drawn. The draw-plate being made to bear against the draw-bench, and the levers being turned, the metal is pulled by the pincers through a hole in the draw-plate. It is afterwards drawn successively through smaller holes, being coiled upon the roller as it is drawn out. As the metal becomes stiff and hard by the repetition of this process, it is necessary to anneal it from time to time, to restore its ductility. It is also occasionally immersed in an acid liquid, to loosen the superficial oxide which is formed in the process of annealing.

WIRE OF LAPLAND; a shining, slender substance, made of the sinews of the rein-deer, soaked in water, beat, and spun into a sort of thread, of great strength. The wire, as it is called, is made of the finest of these threads, dipped in melted tin, and

drawn through a horn with a hole in it. This wire the Laplanders use in embroidering their clothes.

WIRING. See *Sturdy*.

WIRKSWORTH; a market town in Derbyshire, England, 140 miles north-west by north, from London. The inhabitants derive their chief support from the working of the lead-mines, but some of them are also employed in the manufacture of cotton; and in the immediate vicinity are establishments in which common ginghams are made, and others for the production of hosiery, hats, tape, silk, and for wool-combing. The mines and miners are governed by ancient customs; and all disputes and offences are determined at the Barmote courts, held twice a-year before the steward, in the moot-hall, a handsome stone-building, erected in 1814, by the Hon. Charles Bathurst, late chancellor of the duchy. In this hall is deposited the ancient brass dish, the standard from which those used for measuring the ore are made, which must be brought to be corrected by it, at least twice a-year, by all the miners. The laws and regulations, by which these courts are governed, are very similar to those in force in the mining districts of the duchy of Cornwall; one remarkable custom is, that each person has the privilege of digging and searching for lead-ore in any part of the king's field, which, with a few exceptions, comprehends the whole wapentake: when a miner has discovered a new vein of ore, he has a right to work it and erect buildings necessary for that purpose, without making any compensation to the owner of the land. Population in 1831, 7754; in 1841, 7891.

WIRTEMBERG. See *Würtemberg*.

WISBADEN, or WIESBADEN, a town in the duchy of Nassau, eight miles from Mentz, famous for its baths, is pleasantly situated in a small plain, prettily built, and provided with pleasant promenades. Population 4600. Its springs attract yearly from 3000 to 4000 strangers. Fourteen of them are hot (temperature of the hottest, 151°), and two cold. The duke of Nassau has a castle here, with a library of 27,000 volumes. The Romans were acquainted with the springs of Wisbaden, under the name of *Aquæ Mattiacæ*, or *Mattiaci fontes*; and the remains of works supposed to have been constructed by Drusus are still visible here.

WISBEACH; a market-town and seaport in Cambridgeshire, ninety-four miles north by east from London. Its name is supposed to have been derived from Wise, the ancient name of the river Ouse, and *bec* the Saxon, signifying a situation near the confluence of two rivers. William the Conqueror erected a castle here, which in 1236 was destroyed by an inundation. Another structure was built on the same site some years after by Bishop Morton, and it became the episcopal palace of the bishops of Ely. In the reign of Elizabeth it was used for the confinement of state prisoners, and in the time of the Commonwealth was purchased by Thurloe, Oliver Cromwell's secretary. The town, consisting of several well-built streets, and a handsome circus erected in 1816, on the site of the ancient castle, is situated on the river Nene, which is crossed by a bridge. Here are also a theatre, an assembly-room, a literary society, and two extensive libraries, besides every convenience for salt-water bathing. The trade of the port is very extensive, particularly in corn and butter, besides coals, timber, and wine; and a considerable number of vessels, both British and foreign, are annually cleared from hence; in connexion with the commerce of Wisbeach is a custom-house, a part of which is also used as a town-hall, a corn exchange, and a convenient quay. Population in 1841, 8530.

WISCONSIN. See *Ouisconsin*.

WISDOM, Book of. See *Sirach*.

WISHART, George, one of the first martyrs to the Protestant religion in Scotland, was born in the beginning of the sixteenth century, and appears to have been early distinguished by his attachment to the principles of the reformation, originating, it is said, in his travels to Germany, where he became acquainted with the opinions of Luther. Some accounts assert that he was banished from his own country for teaching the Greek Testament, and that he subsequently resided for some years in the university of Cambridge. In 1544, he returned to Scotland, where he was received with the most ardent good will, and began to preach against the corruptions of the church of Rome, and the vices of the clergy. This conduct exasperated cardinal Beaton, and the priesthood under his influence, and subjected the life of Wishart to more than one attack, until, at last, he was arrested, and, in 1546, put on his trial for obstinate heresy, before a convocation of prelates and clergy, assembled for the purpose in the cathedral. He was found guilty, and condemned to the flames; which sentence was put into execution on the 28th March, in the castle yard of St Andrews, with great pomp and ceremony. Most accounts assert that the cardinal and clergy attended; and so much indignation was apprehended on the part of the people, that the artillery of the castle was pointed towards the place of execution. (See M'Crie's *Life of Knox*. See also Tytler's History of Scotland, where much new light is thrown on the conduct of the early reformers, and on the circumstances which led to the assassination of cardinal Beaton). Wishart is said to have predicted, at the stake, the speedy and violent death of the cardinal; and it is now pretty clearly ascertained, that he spoke less from the inspiration of prophecy than from a secret knowledge of the conspiracy that had already been formed against that dignitary's life.

WISHTONWISH. See *Marmot*.

WISMAR; a town in Mecklenburg-Schwerin, capital of a district, on a bay of the Baltic, opposite to the island of Poel, thirty miles west-south-west of Rostock, thirty-three east of Lübeck; lon. 11° 26′ E.; lat. 53° 55′ N.; population, 10,000. It is surrounded with a wall and moat, has a safe harbour, though not deep enough for large vessels. It has a gymnasium, a public library, three hospitals, three churches, some manufactures of woollens and linens, and considerable shipping trade, particularly in corn. It was formerly a Hanse town. In the beginning of the seventeenth century, it was added to the duchy of Schwerin, and, by the peace of Westphalia, was ceded to Sweden. It has, since then, been repeatedly besieged. In 1803, Wismar, with its territory, was ceded to the duke of Mecklenburg-Schwerin, for the sum of 1,200,000 dollars banco.

WISTAR, Caspar, a distinguished physician, was born in the year 1760. His father was a German, from the Palatinate, who emigrated to America, and settled, as a glass manufacturer, in New Jersey. He belonged to the society of Friends, of which society doctor Wistar remained a member. He was educated at the grammar school, established by William Penn, in Philadelphia, and early determined to pursue the profession of physic. With

this view, he entered as a private pupil with doctor John Redman, and attended the lectures then given in the medical school of Philadelphia, which was daily rising in public estimation. In 1782, he received the degree of bachelor of medicine, after passing an uncommonly satisfactory examination; and, in the course of the next year, he left America to pursue his studies in Europe. In 1786, he graduated at Edinburgh with great reputation, and published his thesis *De Animo demisso*. He travelled over a great part of England on foot, examining the mining and manufacturing districts of that country, and whatever else was likely to engage the attention of a man of science. He perambulated Scotland also in the same way. The associations he formed, the friendships he contracted, and the reputation he established wherever he resided, were honourable to himself and his country. The royal medical society of Edinburgh chose him a member. In February, 1787, he returned to Philadelphia, and was appointed, soon after his return, consulting physician to the Philadelphia dispensary, and was one of its early attending physicians. He was further appointed physician to the hospital, and afterwards became adjunct professor to doctor William Shippen, in the departments of anatomy and surgery. As assistant to doctor Shippen, he acquired the practical skill, as a dissector and demonstrator, which laid the foundation of his subsequent reputation. On the decease of doctor Shippen, doctor Wistar was appointed to fill the chair of his departed friend: he had, in fact, long performed the duties of this department. In 1816, he was unanimously elected president of the American philosophical society. Doctor Wistar was too actively engaged to appear often in the character of an author; but his Remarks on the Fever of 1793, his Memoirs on the Ethmoid Bone, and on the Remains of an Animal of the Bos Species, were well calculated to enhance his reputation. His System of Anatomy, (2 vols., Philadelphia, 1812), comprising the heads of his course, is a most useful compend, embracing not merely the anatomy, but the anatomical physiology, of the parts noticed, according to the best views at present known of that branch of the subject. Doctor Wistar was a most active contributor to knowledge of all kinds, by his scientific meetings at his own house, which was the place of resort of all strangers who had information to communicate, as well as of his friends who were engaged in any scientific pursuit. As a professor of anatomy, he was remarkable for the skill and care with which his subjects were prepared and brought forward; the simple, neat, intelligible style of his lectures; the kind and friendly character of his voice and manner; and his anxiety to make his students fully comprehend what they had to learn. He died on January 22, 1818. He was twice married, and, by his second wife, left two children.

WIT is the faculty of detecting, and presenting in a lively manner, similarities in things in which common observers see only diversity. The finding of such similarities presupposes comparison; and wit might therefore be defined a facility in the comparing power to discover unexpected relations, or a playful exercise of the power of comparison. We sometimes apply the name of *wit* to various other sorts of ingenious thoughts expressed in words, in which sense it corresponds to the French *bon mot*. Wit is the more striking, the more easily it brings together things which, to the common observer, appear distinct, and the less obvious the resemblances which it discovers. It is intimately connected with vivacity and quickness of imagination, and is much improved by practice. The similarities or differences which wit points out, need not actually exist, but may be merely the creation of the imagination. There must, however, be some ground for the relation presented, though it may be a trifling one, which is called the *point of comparison* (*tertium comparationis*). Dugald Stewart inclines to believe that the pleasure afforded by wit, is founded, to a considerable degree, on the surprise of the hearer at the command which the man of wit has acquired over a part of the constitution so little subject to the will. Hence it is that we are more pleased with a *bon mot* which occurs in conversation, than with one which appears in print; and we never fail to receive disgust from wit, when we suspect it to be premeditated. Doctor Campbell remarks that a witty repartee is infinitely more pleasing than a witty attack, and that an allusion will appear excellent when thrown out extempore in conversation, which would appear execrable in print. Wit is a dangerous power. When employed to attack pedantry, pretension, or folly, not easily assailable in other ways, it is in its proper sphere; but its power may be, and often has been, used to make truth ridiculous. Its influence is most dangerous among those nations whose apprehension is most quick, and whose sensibility is most lively. How important an influence have some *bons mots* exerted in France, false and noxious though they were! Wit has even sometimes taken the place of philosophy in that country; but its influence, at present, is much diminished. Wherever it becomes the habitual exercise of the mind, it impairs the nobler powers of the understanding, and chills the feelings. When too much in vogue, it gives a superficial character to the tone of society, and creates a craving for evanescent excitement. The merely witty are seldom popular: they are feared and hated, because they have a weapon which others feel the want of; but when wit is united with superior intellectual powers, and particularly with a kind disposition, it is a most valuable gift, and of very great advantage to public men. Wit is a talent, and therefore natural; but it may be much developed by exercise, and is promoted by general liveliness of conceptions, agreeable social intercourse, and an easy condition in life. It is, at the same time, one of the most difficult talents to manage, as few will abstain from a witty observation from fear of hurting the feelings of others, and departing from the tone of kindness so necessary in good society.

WITCH, WITCHCRAFT. A witch is a person who has acquired supernatural power by entering into a compact with evil spirits. In this sense of the word, the notions of witchcraft are essentially of modern origin, being entirely distinct from the superstitions of the ancients concerning the magical powers of the enchantments of their sorcerers. (See *Magic*.) The term *witch* occurs, indeed, in our version of the Scriptures, according to which, the law of Moses is, "Thou shalt not suffer a witch to live" (*Exodus*, xxii, 18); but, besides that many commentators believe the Hebrew term *charasp*, here translated *witch*, should be rendered *poisoner*, there is nothing to indicate any such infernal league between the Hebrew sorceress and diabolical powers, as is the distinctive mark of modern witchcraft. Trafficking with idols, using charms, invocations, &c., seem to constitute the

crime of witchcraft, so often referred to in the Scriptures, both of the Old and New Testament. Among the early Christians, the belief in the active agency of the spirit of evil in human affairs became more fully developed than it had previously been; and it has been a familiar notion with Christian writers, from an early period, that the gods of the ancients were actually wicked spirits, who had led the nations astray from God, and blinded them to destroy them. Hence they have attributed to the heathen oracles the character of prophecy, but ascribed their prophetic powers to the devil; and it is well known that the Sibylline oracles have been quoted, by Christian theologians, in proof of the divine character of the Saviour. "There appears nothing," says Sir Walter Scott (Demonology and Witchcraft) "inconsistent in the faith of those, who, believing that, in the elder time, fiends and demons were permitted an enlarged degree of power in uttering predictions, may also give credit to the proposition, that, at the divine advent, that power was restrained, the oracles silenced, and those demons who had aped the divinity of the place, were driven from their abode on earth, honoured as it was by a guest so awful." The opinion here alluded to is the commonly-received opinion that the heathen oracles were struck silent at the time of the coming of Jesus Christ. (See *Demon*, and *Devil*.) The legends of the saints, the tales of the trials and temptations of holy anchorites, in many of which the devil plays so important a part, contributed to extend and confirm the popular notions; and, a direct diabolical agency being once assumed and allowed, there was nothing too absurd to be engrafted on it. The insane fancies of diseased minds, unusual phenomena of nature, and the artful machinery of designing malignity, ambition, or hypocrisy, were all laid at Satan's door. In the *Sachsenspiegel* (q. v.) of the thirteenth century, the sorcerer and the witch are ordered to be burned; but it was not until the fifteenth century that the proceedings against witchcraft assumed their most hideous form. In 1484, Innocent VIII. issued a bull directing the inquisitors to be vigilant in searching out and punishing those guilty of this crime; and the form of proceeding in the trial of the offence was regularly laid down in the *Malleus Maleficorum* (Hammer of Witches), which was issued soon after by the Roman see. The bull of Innocent was enforced by the successive bulls of Alexander VI. (1494), Leo X. (1521), and Adrian VI. (1522). Of the extent of the horrors which followed, during two centuries and a half, history gives us her record. We are told that 500 witches were burned at Geneva, in three months, about the year 1515; that 1000 were executed in one year in the diocese of Como; in Würtzburg, from 1627 to 1629, 157 persons were burned for witchcraft; and it has been calculated that not less than 100,000 victims must have suffered, in Germany alone, from the date of Innocent's bull to the final extinction of the prosecutions. The last execution in Würtzburg took place so late as 1749, and a witch was burned in the Swiss canton of Glarus in 1780. Bamberg, Paderborn, Würtzburg and Treves were the chief seats of this delusion in Germany. In England, the state of things was no better; and even the reformation, which exploded so many other errors, seems to have had no influence upon this. Individual cases of trial for witchcraft occur in this country previous to the enactment of any penal statute against it; and the successive statutes of Henry VI. Henry VII. (1541), Elizabeth (1562), and James I. (1603),—the last passed when lord Bacon was a member of the house of commons, and not repealed until 1736,—show the extent of the legislative proceedings in regard to this imaginary crime here.* The judicial proceedings were checked chiefly by the firmness of Holt, who, in about ten trials, from 1694 to 1701, charged the juries in such a manner as to cause them to bring in verdicts of acquittal. Yet, in 1716, Mrs Hickes and her daughter, nine years of age, were hanged for selling their souls to the devil, and raising a storm by pulling off stockings and making a lather of soap. The number of those put to death in England has been estimated at about 30,000! The last victim executed in Scotland perished in the eighteenth century (1722). "She was," according to Sir Walter Scott, "an insane old woman, who had so little idea of her situation as to rejoice at the sight of the fire which was destined to consume her. She had a daughter lame both of hands and feet—a circumstance attributed to the witch's having been used to transform her into a pony, and get her shod by the devil."—America furnishes a chapter in this dreadful history of human folly. In 1692, nineteen persons were executed, and one pressed to death, in Salem and its vicinity, for the crime of witchcraft; but, though several were condemned and many accused, there were no executions subsequent to that year.—See, on this subject, Horst's *Zauber-Bibliothek*, &c.—i. e. Magical Library, or of Magic, Theurgy and Necromancy; Magicians, Witches, and Witch-Trials, Demons, Ghosts, and Spectral Appearances (Mentz, 6 vols., 8vo., 1826); and his *Dämonomagie*, or History of the Belief in Magic, &c. (2 vols., 1818).

According to the notions of the times above indicated, witches were able, with the assistance of the devil, not only to foretel events, but to produce mice and vermin; to deprive men and animals, by touching them, or merely breathing upon them, of their natural powers, and to afflict them with diseases; to raise storms; to change themselves into cats, and other beasts; &c. The compact with the devil was sometimes express, whether oral or written, when the witch abjured God and Christ, and dedicated herself wholly to the evil one, or only implied, when she actually engaged in his service, practised infernal arts, and renounced the sacraments of the church. The express compact was sometimes solemnly confirmed at a general meeting, over which the devil presided, and sometimes privately made by the witch signing the articles of agreement with her own blood, or by the devil writing her name in his black book. The contract was sometimes of indefinite duration, and, at others, for a certain number of years. The witch was bound to be obedient to the devil in every thing, while the other party to the act promised her wealth and treasures; but the gold thus obtained usually turned into some worthless material in the hands of its possessor. These and similar facts were gathered from the *voluntary confessions* of persons accused of this crime, whose

* "To deny the possibility, nay, actual existence, of witchcraft and sorcery," says Blackstone (Commentary on the Laws of England, B. iv., ch. 4, sec 6), "is at once flatly to contradict the revealed word of God in various passages both of the Old and New Testament; and the thing itself is a truth to which every nation in the world hath in its turn borne testimony, either by examples seemingly well attested, or by prohibitory laws; which, at least, suppose the possibility of a commerce with evil spirits."

ingenuity was generally quickened by the application of what was then called "*gentle torture.*" General assemblies of witches were held yearly or oftener, in which they appeared entirely naked, and besmeared with an ointment made from the bodies of unbaptized infants. To these meetings they rode, from great distances, on broomsticks, pokers, goats, hogs or dogs; the devil taking the chair under the form of a goat. Here they did homage to the prince of hell, and offered him sacrifices of young children, &c., and practised all sorts of license until cock-crowing. Besides extorting confessions by torture, it was usual to subject the accused to the witch-ordeal; that is, their thumbs being tied together, they were thrown into the water, and if they did not sink they were considered guilty.

WITCH-HAZEL (*hamamelis virginica*); a North American shrub, remarkable for putting forth its flowers at the season when most forest-trees are parting with their leaves. It grows six or eight feet high, dividing, at base, into several cylindrical, grayish branches: the buds and young shoots are covered with short down: the leaves are about four inches long by two or three broad, alternate, petiolate, oval, obtuse, having a few coarse indentations: the flowers are clustered, yellow and showy, having long and linear petals. A forked twig of the witch-hazel forms the celebrated divining rod, which has been used in many parts of the interior to impose on the credulous.

WITHER, George, an old English poet, was born at Bentworth, in Hampshire, June 11, 1588. His parents, who were very respectable, sent him to Magdalen college, Oxford. He was, however, prematurely removed from the university, with a view to agricultural pursuits; but, disliking a country life, he went to London, and entered himself a student of Lincoln's Inn. Here he paid more attention to the muses than to law, and acquired the reputation of a poet. In 1613, appeared his celebrated satires, entitled Abuses Stript and Whipt, the severity of which led to his confinement in the Marshalsea, where he wrote his Satire to the King, which procured his release. In 1615, he published his Shepherds Hunting, written during his imprisonment in the Marshalsea, the most poetical of all his works. Attaching himself to the Puritans, he was violently assailed by their opponents. He took an active part on the side of parliament when the civil war broke out, and sold an estate to raise a troop of horse, and obtained the rank of major. He was made a justice of peace, by the long parliament, for three counties, and major-general of all the horse and foot in the county of Surrey, by Oliver Cromwell. On the restoration, he lost all which he had amassed by his previous employment; and, having published a piece denominated *Vox Vulgi*, he was committed to Newgate, and afterwards to the Tower, where he was denied the use of pen, ink and paper. In this confinement he remained more than three years, and wrote several things, by the connivance of the keeper, which were subsequently published. When he was released is not recorded; but he died May 2, 1667. Some of his works have been republished by Sir Egerton Brydges, including his Shepherds Hunting (1814), his Fidelia (1815), and his Hymns and Songs of the Church (1815). The other works are scarce.

WITHERING, William; a distinguished physician and writer on botany, was born in 1741. He studied at Edinburgh, where he took his doctor's degree in 1766. He then settled at Stafford, and afterwards removed to Birmingham, where his skill and assidnity speedily raised him to eminence in his profession. The chief objects of his attention, independent of his duties as a medical practitioner, were chemistry and botany; the result of his researches appeared in several valuable publications. Being subject to pulmonic disease, he thought it desirable, in 1793 and 1794, to pass the winter at Lisbon; and, after his return home, he did not again resume, to any extent, his professional practice. He died at the Laroches, near Birmingham, in November, 1799. His principal publications are, a Systematic Arrangement of British Plants (2 vols., 8vo., 1776, extended, in the edition of 1787, to three volumes, and, in that of 1796, to four); an Account of the Scarlet Fever and Sore Throat, or *Scarlatina Anginosa* (1779, 8vo.); an Account of the Foxglove, and some of its Medical Uses, with Practical Remarks on the Dropsy and other Diseases (1785, 8vo.); a Chemical Analysis of the Waters at Caldas da Reinha (Lisbon, 1795, 4to.); besides a translation of Bergman's *Sciographia Regni Mineralis*, and papers in the Philosophical Transactions relative to mineralogy. The name of *Witheringia* has been bestowed on a genus of American plants by L'Heritier; and the native carbonate of barytes has received the appellation of *Witherite*, in honour of doctor Withering, who first discovered and described it.

WITHERSPOON, John, D.D., LL.D., president of the college at Princeton, New Jersey, was born in Yester, Scotland, Feb. 5, 1722, and educated at Edinburgh. He was settled in the ministry, first at Beith, and afterwards at Paisley, and became one of the most distinguished of the Scottish clergy for talents and influence. He published, while there, his Characteristics, and became the leader of the orthodox part of the clergy. He was invited to remove to several distinguished cities in Europe, but, at length, accepted an appointment to the presidency of the college at Princeton, New Jersey, and came to that state, with his family, in 1768. The war of the revolution dispersed the students, and left him at leisure to engage in civil employments, to which he was almost immediately called. He was elected a member of the convention which formed the constitution of New Jersey, and, in 1776, was appointed a member of congress, and retained a seat in that body till the conclusion of peace. His name is affixed to the Declaration of Independence, and the Articles of Confederation. After the war, the college was re-opened, and he returned to his duties there. During the last two years of his life, he suffered the loss of his sight. He died November 15, 1794, in the seventy-third year of his age. He possessed a mind of great vigour and activity, of uncommon shrewdness and humour. His learning was very various and extensive, and his discernment of character singularly keen. His preaching was characterized by perspicuity and energy. He was an able politician, and a zealous friend of liberty, and a highly amiable, amusive, and instructive companion. His works have been published in 4 vols., 8vo.

WITNESS. See *Evidence.*

WITNEY; a market-town in Oxfordshire, 65 miles W. N. W. from London. It is pleasantly situated on the river Windrush, over which is a good stone bridge, erected in 1822. The town consists chiefly of two streets, the houses of which are of a neat and uniform character. The chief

manufacture of Witney is in blankets, for the excellent quality of which it has long been distinguished. The manufactures of this town and the district for twenty miles round, were incorporated in the reign of Queen Anne. At that period they kept 150 looms at work, employed about 3000 persons, and used a thousand packs of wool weekly. The charter, however, no longer exists. Other woollen goods are made here, besides gloves, paper, malt, &c. Population in 1841, 5707.

WITT, De. See *De Witt.*

WITTEKIND, or WITIKIND; a celebrated prince of the Saxons, and their principal champion in the war against Charlemagne. The Saxons, a numerous and brave people, inhabited the northern part of Germany, between the Rhine, the Elbe, and the North sea, or the present Westphalia and Lower Saxony, under the names of Eastphalians, Westphalians, and Engrians. (See *Saxons.*) Charlemagne, desirous of putting a stop to their frequent incursions into his territories, and moved also partly by religious motives, determined to subdue these wild heathens. The war began in 772, and continued for about thirty years, till 803, with some intermissions. The Saxons, inferior to the Franks in military discipline and skill, were repeatedly defeated, and several times yielded to the commands of their victorious enemy, but again took arms as soon as his attention was drawn to other parts of his extensive empire. After gaining several decisive victories (783), Charlemagne had recourse to conciliatory measures, and prevailed upon Albion and Wittekind, the two leaders of the Saxons, to submit, on advantageous conditions, and embrace Christianity (785.) Wittekind, who had been obliged to flee to Denmark, obtained the restoration of his territories, and, according to some writers, was created duke of Saxony. (See *Germany, History of.*) Wittekind is supposed to have fallen in battle against Geroald, duke of Suabia, in 807. The present Saxon princes claim a descent from Wittekind, but without much ground.

WITTENBERG, a town of historical interest as connected with the reformation, is situated on the Elbe, in the Prussian province of Saxony. Here is a bridge, 500 ells long, over the Elbe. Including the military, the town contains 6345 inhabitants. Since 1817, two new suburbs have grown up. The church in which Luther fixed up his ninety-five celebrated theses, Oct. 31, 1517, and, in which he, Melancthon, and the electors Frederic the Wise, and John, lie buried, has been repaired by the Prussian government. The university, founded in 1502, by the elector Frederic the Wise, has been united, by the Prussian government, with that of Halle, and a theological seminary has been established instead of it. Charles V. took Wittenberg in 1547, after the battle of Mühlberg; but the property of the people, their religious worship, and the tombs of the reformers, were left untouched. The emperor was requested to disinter the body of Luther; but he answered, "I wage no war with the dead." The city was bombarded in the seven years' war, and dismantled. As the ditch and wall remained, Napoleon ordered marshal Victor to restore the fortifications, and garrisoned the place with Poles. The Prussians took it by assault at midnight, Jan. 12, 1814. The Prussian general, count Tauenzein, received the name Tauenzein von Wittenberg in consequence of this victory. The king of Prussia laid the corner-stone of a monument, in honour of Luther, in Wittenberg, on the third centennial celebration of the reformation. In 1822, the statue of the reformer, made of cast iron, by Schadow, was erected.

WLADIMIR (*Wlodimir*), czar of Russia, became, in 981, after the death of his two brothers, master of the Russian dominions, which he increased by the conquest of several neighbouring tribes. Upon his marriage with the Greek imperial princess Anna Romanowna, in 988, he was baptized, and together with his whole nation, adopted Christianity. The first Christian teachers of Russia came from Constantinople, and introduced the Greek Catholic worship, which still prevails in Russia. Wladimir, as the first Christian ruler, and the founder of many convents and schools, is called in Russian history, a saint; and, as he laid the foundation of the subsequent greatness of the empire, he is also called the Great. He died in 1015. His descendants divided the empire among themselves to their own ruin. In 1782, Catharine II. founded the order of St Wladimir in honour of him.

WOAD (*isatis tinctoria*); a cruciferous plant, occasionally cultivated for its leaves, which afford a dye, in use as a substitute for indigo. The seeds are sown on well-prepared land, and fresh-broken, old pasture ground is preferred. As the great object is to produce large leaves, the mode of culture given, by the best gardeners, to spinage should be imitated—that of sowing on a very rich, well-pulverized soil, thinning the plants so that they may not touch each other, keeping them perfectly clear of weeds, and frequently stirring the soil between them. The seeds are sown in July; and the plants, when they come up, are weeded and thinned. Next July, or earlier, the first crop of leaves may be gathered; and two or three others will be obtained during the season. At the end of the second year, the plants may be ploughed down, as the third year they will run to seed, and produce but small leaves. The leaves are pressed, and the juice treated as in making indigo; but such is the cheapness of the latter article, that the cultivation of woad is not much attended to at the present time. The plant grows wild in the south of Europe. The radical leaves are crenate, those of the stem oblong and arrow-shaped; the flowers are small and yellow, and the pods elliptical, flat, and contain a single seed.

Woad is prepared for use as follows:—The plant puts forth, at first, five or six upright leaves, about a foot long and six inches broad. When these hang downwards and turn yellow, they are fit for gathering. Several crops are gathered in one year. The leaves are carried directly to a mill, much like the oil or tan mills, and ground into a smooth paste. The paste is laid in heaps, pressed close and smooth, and the blackish crust which forms on the outside re-united if it happen to crack; if this precaution were omitted, little worms would be produced in the cracks, and the woad would lose part of its strength. After lying for fifteen days, the heaps are opened, the crust rubbed, and mixed with the inside, and the matter formed into oval balls, which are pressed close and solid in wooden moulds. These are dried upon hurdles. In the sun they turn black on the outside, in a close place yellowish, especially if the weather be rainy. The dealers in this commodity prefer the first, though it is said the workmen find no considerable difference between the two. The good balls are distinguished by their being heavy, of an agreeable smell, and, when rubbed, of a violet colour within. For the

use of the dyer, they require a further preparation. They are beaten with wooden mallets, on a brick or stone floor into a gross powder, which is heaped up in the middle of the room to the height of four feet, a space being left for passing round the sides. The powder, moistened with water, ferments, grows hot, and throws out a thick fetid fume. It is shovelled backwards and forwards, and moistened every day for twelve days, after which it is stirred less frequently, without watering, and, at length, made into a heap for the dyer. The powder thus prepared gives only brownish tinctures, of different shades, to water, to alcohol, to ammonia, and to fixed alkaline lixivia. Rubbed on paper, it communicates a green stain. On diluting the powder with boiling water, and, after standing for some hours in a close vessel, adding about one twentieth its weight of lime newly slacked, digesting in a gentle warmth, and stirring the whole together every three or four hours, a new fermentation begins: a blue froth rises to the surface, and the liquor, though it appears itself of a reddish colour, dyes woollen of a green, which, like the green from indigo, changes, in the air, to blue. This is one of the nicest processes in the art of dyeing, and does not well succeed in the way of a small experiment.

WODEN, OR ODIN; one of the most powerful deities in northern mythology. Some have derived him from the Indian Buddha. The ancient Saxons and Thuringians honoured him as their god of war; and the former solemnly vowed, in their war with Charlemagne, to sacrifice to him all their prisoners. (See *Northern Mythology*.) The Romans recognised their Mars in this northern god.

WOFFINGTON, MARGARET, an actress, highly distinguished for her beauty and talents, was born at Dublin, in 1719. Her father kept a huckster's shop; and she commenced her theatrical career as the pupil of madame Violante, an exhibitor of feats of activity on the tight rope, who, about 1728, formed a company of Lilliputian actors. In these exhibitions little Woffington, then in her tenth year, attracted much notice as the representative of Macheath in the Beggar's Opera. A few years after, she procured an advantageous engagement at one of the regular Dublin theatres, where she acquired so much reputation, that she was invited to London; and, in 1740, she made her appearance at Covent garden, in the character of Sylvia, in the Recruiting Officer. She then took up the part of sir Harry Wildair, in which she was extremely successful. In comic characters, from the finished coquette or haughty lady of high rank and fashion, to the affected old maid, or vulgar termagant, she displayed a truth and facility of personification which has rarely been exceeded. Her attractions in private life were widely felt and acknowledged, and her society sought by persons of rank and talents. She was president of the weekly beef-steak club, held in the green room of Covent garden theatre. At length the derangement of her health induced her to retire from the stage in 1759; and her death took place in 1760.

WOHLGEMUTH, MICHAEL, an old German painter, born in 1434, died in 1519, was the teacher of Albert Dürer. There is a large altar piece by him in Nuremberg, his native city. There are also fine pictures by him in the galleries of Vienna, Munich, and other cities, and those of private persons. Some have also thought the beautiful Last Judgment at Dantzic to be from his pencil. Like other painters of his time, he was also an engraver on copper and wood. The Chronicle of Nuremberg, published in 1493, contains woodcuts by him.

WOIWODE; a Sclavonic word, which signifies leader in war, and is a compound of the two Sclavonic words, *woi*, troops, and *wodit'*, to lead. The princes of Walachia and Moldavia were called *woiwodes* before they received from the Greek emperors, with whom they were in some degree connected (1439), the title of *despot*; instead of which they adopted, at a later period, the title of *hospodar*, which signifies lord. At present, *woiwode* signifies a Turkish farmer-general of the taxes of a district. In the old kingdom of Poland, *woiwodes* were governors of the districts (woiwodeships) into which the kingdom was divided. They administered justice, had charge of the police, and formed the first class of the temporal estates of the kingdom. In the time of war, when the nobility were called to march, each woiwode commanded the nobility of his woiwodeship.

WOLCOT, JOHN, M.D., a poet and satirist, was born at Dodbrock, in the county of Devon, in 1738, educated at the free school of Kingsbridge, in the same county; after which he visited France, and, on his return, was articled to an uncle, an apothecary at Fowey. He early showed an attachment to poetry, as also to drawing, in which he became a considerable proficient. He subsequently visited London, to attend the hospitals, and, in 1767, obtained the degree of doctor of physic from Scotland, and accompanied Sir William Trelawney to Jamaica, of which the latter was appointed governor. Here meeting but little encouragement as a physician, he obtained orders, and became rector of a living in the gift of his patron, which, being attended exclusively by a black congregation, received little of his attention. On the death of Sir William Trelawney, he returned with his widow to England; and, on the decease of his uncle, who left him the principal part of his property, he settled as a physician, first at Truro, and afterwards at Helstone, in Cornwall. While in this situation, he had the merit of discovering the talents of the late celebrated painter Opie, then a mere youthful miner, with whom, (in 1780), he came to London. Here he soon rendered himself conspicuous by those satirical compositions which he published under the name of *Peter Pindar*, and which, for the drollery and great peculiarity of their humour, became, in the highest degree, popular. His attacks were, in the first instance, chiefly levelled at the royal academicians; but, ultimately, the harmless singularities of George III., his consort, and family, formed the principal field for his wit. So much was thought of his talents, that a negotiation was at one time entered into with him, by the under secretary of the treasury, to become either silent, or to direct his satire against the opponents of administration, which, however, came to nothing, owing to his backwardness to write on that side of the question. Having obtained an annuity from his booksellers of £250 per annum, and being otherwise in easy circumstances by the sale of his productions, he passed the close of his life in ease and convivial enjoyment, interrupted, however, in the sequel, by blindness and other maladies. His death took place in Somers Town, in 1819, in the eighty-first year of his age. As a man, doctor Wolcot assumed much license, and may be regarded as an epicurean of the coarser class. As a poet, he exhibits freshness, *naïveté*, and a portion of humour, singularly made

up of the playful and the biting. His works have lost much interest, owing to the temporary and personal nature of his subjects; but the extreme felicity with which he exposed the empty pretensions of false greatness, will not allow them to be altogether forgotten. His poetical works were collected, in 1812, in five volumes, octavo.

WOLD, WELD, YELLOW WEED, OR DYER'S WEED (*reseda luteola*); an imperfect biennial, with small fusiform roots, and a leafy stem, from one to three feet in height. It is a native of Italy and other parts of Europe, and is cultivated for the sake of its stalk, flowers, and leaves, which are employed in dyeing yellow. Wold requires the growth of nearly two summers before it comes to maturity: the crop is also liable to fail, and is exhausting to the soil. It is preferred to all other substances for giving the lively green lemon yellow; but as it is found, when employed in topical dyeing, to degrade and interfere with madder colours more than other yellows, and to stain the white parts, quercitron bark is commonly employed in preference to it. It is still, however, employed in dyeing silk a golden yellow, and in paper-staining.

WOLE, in northern mythology, the protecting spirit of the earth—an old prophetess. The name *Voluspa* (the vision of Wole), given to the most ancient part of the Edda, is derived from her.

WOLF (*canis lupus*). The wolf is by some naturalists considered the original stock of the domestic dog; and, indeed, it very much resembles a large dog in its general appearance. The European wolf habitually leads a solitary life, but, when

urged by hunger, unites in packs, which, at times, even become dangerous to travellers. It possesses such strength that it is able to carry off a sheep at full speed, and few dogs are able to attack it with success. When taken young, it is easily tamed, and becomes attached to its keeper, recognising him even after a year's absence. The female brings forth her young in a retired place in the forest, and defends them courageously.

Wolves were extirpated much earlier in England than any other country of Europe. No mention is made of them in the English annals after 1281. The last wolf known in Scotland was killed in 1680, and in Ireland one was killed in 1701.

The American wolf is probably a distinct species; but this point is not yet perfectly ascertained. It was formerly numerous in all parts of the United States, but is now almost extinct in the more settled districts.

There is another species of wolf—the prairie or barking wolf (*C. latrans*)—on the unwooded plains of the Missouri.

The black wolves are probably mere varieties of the common species.

WOLF, ARNOLDINA, was born at Cassel, in Germany, in 1769. She lost her father, an officer of the Hessian government, early, but her mother took great care of her education. In her eighteenth year she was attacked by the horrid disease called *scabies humida*, and passed twenty-six weeks almost entirely without sleep. On one occasion, in the midst of her severe sufferings, she repeated all the songs which her memory could furnish; after which she composed a poem extempore. Five other poems followed in a similar way. A friend published them in 1788, and a second edition was soon called for. Becoming entirely deprived of strength, she fell, after six months, into a state of apparent death, in which she retained the exercise of no sense except that of hearing, and was conscious only of the fear of being buried alive. After four weeks, she began to recover, and was eventually restored to full health. She married, in her twenty-third year, a Mr Wolf, became the mother of nine children, and died in 1820. Doctor Wiss, of Smalcalden, where she lived, published the poems of Arnoldina Wolf (1817), with a history of her disease.

WOLF, CHRISTIAN FREDERICK VON, chancellor of the university of Halle, a distinguished German philosopher and mathematician, was born in 1679, at Breslau. In 1699, he went to the university of Jena, to study theology; but mathematics and philosophy absorbed almost his entire attention. He studied zealously the works of Descartes and Tschirnhausen. In 1703, he obtained permission to lecture at the university of Leipsic, in consequence of his disputation, *De Philosophia practica universali Methodo mathematica conscripta*, and delivered philosophical and mathematical lectures. Several mathematical works made his name known in foreign countries. When the Swedes occupied Leipsic, in 1706, he left it, and, upon the recommendation of Leibnitz, in 1707, was appointed professor at Halle, where he acquired great reputation. His mathematical lectures were remarkable for clearness, precision, and systematic method. His philosophy, in which he pursued the same method, met with general approbation; and his method began to be applied also to other sciences, frequently in a pedantic and exaggerated manner. His colleagues, particularly the theologians, declared him a heretic and an infidel, and, at last, actually accused him to the government. King Frederic William I. Nov. 15, 1723, dismissed him from his office, and ordered him to leave Halle in twenty-four hours, and the Prussian states within two days, threatening him with the gibbet in case he should remain. He received an honourable appointment at Marburg. The contest respecting his philosophical system now became general, and almost all Germany took part for or against him. He received offers of appointments in other countries; but he refused these, as well as an invitation to return to Halle, though the examination of his philosophy, by a committee appointed for that purpose, at Berlin, ended in his entire exculpation. In 1740, however, when Frederic the Great, who esteemed him highly, ascended the throne, he returned to Halle. In 1745, the elector of Bavaria, as vicar of the empire, raised him to the rank of nobility. Wolf's fame spread over Europe; but his reputation as a lecturer declined in the latter years of his life, and the number of his hearers decreased. He died in 1754, at the age of seventy-six years. His merits in promoting the progress of philosophy are not to be denied. He directed attention particularly to systematic method. His mathematical method brought light and order into the territory of science; and if

the advance of philosophy has shown that the mathematical method is inapplicable to it, in its whole extent, still it cannot be denied, that great credit is due to him for having carried it through one of its stages. His influence on science and the whole intellectual development of his countrymen was very great. The German language also owes him much. Kant gave the finishing blow to Wolf's dogmatic method.

WOLF, Frederick, Augustus, the greatest philologist of his age, was born in Haynrode, a village near Nordhausen, in Thuringia, in 1759. His father was organist of the village, and subsequently teacher in Nordhausen. His mother, a woman of great ability, educated him well. He early acquired a taste for the study of languages. He was initiated in modern languages by an instructer named Frankenstein, who thought the acquisition of them so easy, if a good foundation was laid in the ancient languages, that he used to lend young Wolf the dictionary of each of them for two months only, a period which he considered sufficient for acquiring the necessary number of words, by copying and learning by heart. Even while at school, at Nordhausen, Wolf pursued the comparative study of the ancient and modern tongues, in order to draw up a comparative grammar. Before entering the university, he had made himself acquainted, partially at least, with the principal classic authors, and those of France, Spain, Italy, and England. His father instructed him in music, and, after having prepared him sufficiently, put him under the care of a learned organist, named Schröter, who delighted him by his acquaintance with the ancient writings on music, while he tormented him with the mathematical part of the science. For mathematics Wolf had no taste, either in his youth or in his riper age. At the age of nineteen years, he went to the University of Göttingen, with the firm intention of devoting himself to philology exclusively. He requested to be called, in the form of matriculation, *philologiæ studiosus*, which was so uncommon a thing, that much objection was made to it; but he was not to be diverted from his resolution, though even Heyne tried to persuade him to have himself entered as *studiosus theologiæ*. His irregular attendance on the lectures brought him into bad repute so that Heyne refused him permission to attend his lectures on Pindar, as utterly unqualified. But Wolf studied so much the more assiduously alone, and in the library of the university. In 1770, he published, at Göttingen, Shakspeare's Macbeth, with explanatory notes, for the use of some students whom he instructed in the ancient languages and English. In consequence of his constant application, he was twice dangerously sick. Before he left Göttingen, in 1779, he laid before Heyne his views respecting Homer, which differed from those of the distinguished professor, and were peremptorily rejected by him. In the same year, he went as teacher extraordinary to the academy at Ilfeld, where he made himself known to the philological world by his edition of Plato's Banquet, with notes in German, perhaps with a view of making himself known to the Prussian ministers, as he already had his eye upon a chair in a Prussian university, the name of Frederic the Great exercising a magic power on genius. In 1782, he was made rector of the town school at Osterode. In the next year he was called upon to become ordinary professor of philosophy, particularly of the science of education, and director of the academy at Halle, with a salary of less than 200 dollars, which place and poor salary, though already married, he preferred to a much more lucrative one, also offered to him. He was then but twenty-four years old. At first, the students did not understand the tone he assumed; and it was not till he treated them as he had done his pupils at Osterode, that he obtained many hearers. It was not till the last ten years of his residence in Halle, that he returned to his first mode of teaching. As an academical teacher, Wolf followed his own peculiar views: he believed that classical antiquity must be considered as a model of public and private life, founded on the noblest ideas, and be treated in this light, as a means of forming the minds of pupils at the universities. His great aim was to be a teacher. To appear as an author, which so many academical instructers regard as of the first importance, was with him but a secondary object. His uncommon activity is shown by the fact that, during the twenty-three years of his residence at Halle, he delivered above fifty courses of lectures, all replete with the traces of a genius of the highest order, in addition to his lectures and labours at the philological seminary. For the use of the students attending his mythological lectures, he published, in 1784, a new edition of Hesiod's Theogony, with a preface and a kind of commentary from lectures already delivered: but this was the only instance of his connecting any publication with his lectures. In the preface a few cautious remarks show his views of the earliest Greeks, as exhibited fully, at a later period, in his *Prolegomena* to Homer. It does him great credit to have waited so long, and to have weighed and considered his ideas so often before publishing them. The book establishment connected with the orphan asylum at Halle, requested him to undertake a reprint of Homer's works from the Glasgow edition. From that period, he often lectured on the whole of Homer. In 1792, appeared his edition of Demosthenes's Speech against Leptines, which added much to his reputation as a philologist, on account of its perfect Latinity, and the masterly character of its introduction, commentary, and corrections of the text. In 1795 followed the first volume of his *Prolegomena* to Homer, in which he gives his views respecting the ancient and original form of the Iliad and Odyssey, the changes which they have experienced, and the most probable mode of restoring them; showing, with rare sagacity and erudition, that the Iliad and Odyssey, as they exist at present, are not the work of one Homer, but of several Homeric rhapsodists. (See *Homer*.) The work attracted great attention all over Europe, gave rise to many controversies, and to the most important historical and critical inquiries. The author had no objection to controversy if truth was thereby elicited, but was offended with the assertions of certain scholars that they had long entertained similar ideas. He became, on this account, involved in disputes with several of them; and Heyne even endeavoured to assume the credit of having suggested to Wolf the ideas which led him to this result. This caused the spirited Letters to Heyne, of which the three first are considered as excellent models of learned controversy and polished irony. In 1801, Wolf laid the critical knife to several speeches of Cicero, proving that they are not genuine, but ought to be considered as mere exercises in declamation, and are unworthy of the great orator. In 1802 appeared his edition of Suetonius. After having refused an in-

vitation to Leyden, in 1796, and, in 1798, to Copenhagen, as director-general of the higher schools, and, in 1805, to Munich, he was made Prussian privy counsellor. Whilst he was occupied with a new edition of the Homeric works (1804 to 1807), the high school at Halle was abolished. Wolfe was now in a very disagreeable situation. In 1807, he went to Berlin, and became member of the department for public instruction in the ministry of the interior, professor of the university, and member of the academy; but he gave up all these appointments, reserving only the right to lecture, according to his pleasure, in the university of Berlin. To the leisure which he now enjoyed, we owe his incomparable *Darstellung der Alterthumswissenschaft*, and the translations from Horace, Homer, and Aristophanes, which are as spirited as skilful. His *Analecta*, one of the most scientific periodicals, he suddenly discontinued, and from that time, published nothing more, being indignant at the censorship which had been established. His health had become broken, and his physician had advised him to visit the south of Europe. In July, 1824, he arrived at Marseilles, where he died, August 8, of an affection of the lungs. The classical ground of the ancient Massilia covers the bones of him who may be said to have first elevated philology to a real science. The disciples of Wolf are numerous, animated with the independent spirit of their great master, and free from the trammels of a school. Wolf's face was noble, and expressed his high-minded character. Fred. Tieck made several marble busts of him. One of his pupils, professor Hanhart, in Basle, has published Reminiscences of Frederic Augustus Wolf (1825.)

WOLFE, Charles, a young Irish divine, of great poetical talent and much promise, was born in Dublin, in 1791. His mother, removing to England on the decease of his father, placed him at Hyde abbey school, in Winchester, where he remained till 1808, when the family returned to Ireland. The following year he entered Trinity college, Dublin, and soon acquired distinction by his abilities and assiduity, which were eventually rewarded by a scholarship. Having taken orders, he obtained the curacy of Castle Caulfield, in the diocese of Armagh; but the active labour in which the superintendence of a large and populous parish involved him, combined with a disappointment of a tender nature, made rapid inroads upon a constitution naturally far from robust, and unequivocal symptoms of consumption displayed themselves. After lingering till the winter of 1822, he died about the end of February, in the following year. The composition which has given him considerable posthumous celebrity, is his Ode on the Death of Sir John Moore, commencing

"Not a drum was heard,"

which lord Byron pronounced "the most perfect ode in the language." Besides this piece, which first appeared anonymously in an Irish newspaper, Mr Wolfe was the author of several minor poems of great beauty. His Remains were published at Dublin (2 vols., 1825), with a notice of his life.

WOLFE, James, a distinguished English general officer, was the son of lieutenant-general Wolfe, and was born at Westerham, in the county of Kent, in 1726. He applied himself early to the profession of arms, for which he was particularly adapted by the bravery, elevation, and decision of his character. Even at the early age of twenty, he attracted attention by his military skill, and, during the whole of the German war, was actively employed, and regarded as a great and rising soldier. At length he was called into high and independent command by the first Mr Pitt, who appointed him to the charge of the important expedition against Quebec. Here he, singly and alone in opinion, formed that great, hazardous, but necessary plan of operation, which drew out the French to their defeat, and insured the conquest of Canada. Having surmounted all obstacles, he encountered the enemy on the heights of Abraham, where, in the moment of victory, he received a ball in the wrist, and another in the body, which rendered it necessary to bear him off to a small distance in the rear. There, roused from fainting in the agonies of death, by the sound of "They run," he eagerly asked, "Who run?" and being told the French, and that they were defeated, he exclaimed, "Then I thank God, and die contented," and almost instantly expired. This event took place Sept. 13, 1759, in the thirty-fourth year of his age. A national monument is erected to the memory of this officer in Westminster abbey. West's picture of the Death of Wolfe has become generally known by Woollett's admirable engraving. The Life and Correspondence of General Wolfe was published in London, in 1827 (2 vols., 8vo.)

WOLFENBUTTEL; a principality of Germany. In a wider sense, Wolfenbüttel formerly comprised the possessions of the elder line of the house of Brunswick, or Brunswick-Wolfenbüttel, in the circle of Lower Saxony (see *Brunswick*); in a narrower sense, that part of the above-mentioned region which now forms the districts of Wolfenbüttel, Schöningen, Harz, and Weser. The town of Wolfenbüttel, till 1754, the residence of the dukes of Brunswick, lies in a low, marshy district, on the Oker, thirty-seven miles south-east of Hanover; lat. 52° 10′ north; lon. 10° 40′ east. Its fortifications have been demolished. Population, 5810. There is here an old ducal castle, an arsenal, and a celebrated library, containing 10,000 manuscripts, and a great number of the early impressions of printed works: the whole number of volumes is stated to be nearly 200,000. The second volume of Ebert's work on Manuscripts (*Zur Handschriftenkunde*), published at Leipsic in 1827, contains a catalogue of the Wolfenbüttel manuscripts.

WOLFF, Pius Alexander, and his wife; two of the most distinguished and accomplished theatrical performers whom Germany has produced. After the stiff and showy mannerism, the conventional pathos, the declamatory rather than dramatic performance of the French, particularly in the higher drama, had given place, in Germany, to a careful imitation of reality, or to noise and violence in the expression of emotion, and every one thought himself intended for an actor, if he had an imposing figure and sonorous voice, the true genius of dramatic art arose, awakened particularly by Göthe at Weimar, and by the union of thought and feeling, of the strength of nature, with the regulated tone of art, as well as by the subordination of reality to ideality, showed the true aim of the actor. The stage at Weimar was adorned by a number of masterly performers, among whom was Wolff. He was born about 1782, at Augsburg, received a very good education, and went upon the stage animated by the idea, that it is the actor's duty to

reproduce the conceptions of the poet, to conceive his creations in their whole spirit, and even to catch the tone of the time in which the scene is laid. In 1804, he became attached to the Weimar theatre, developed his talents in a constant intercourse with Göthe and Schiller, subsequently went to Berlin, and died in 1828. He early excelled in tragedy, and subsequently played also in comedies. He was himself a dramatic writer, and the author of Cæsaria, a comedy; Duty for Duty, a melodrama; the Dog of Aubry; Preciosa, with music by Weber, and other works. His wife, whom he married in Weimar, and whose maiden name was Malcolmi, is still living, and has sustained the reputation of a superior actress.

WOLFGANG, St, one of the early Christian missionaries, was born in Suabia. He studied at Würzberg, under Stephen, a teacher from Italy, went to Treves with the archbishop of that city in 956, and instructed children in Christianity. He subsequently lived for some time with bishop Bruno, of Cologne, brother of Otho I., emperor of Germany, refused all the advantages which this connexion offered, retired to a convent, was ordained a priest by St Udalrich, and, in 972, went to preach the gospel to the Hungarians. In 974, he was elected bishop of Ratisbon. He held the bishopric during twenty years, and endeavoured to sow the seeds of religion and knowledge among the rude tribes with whom he lived. He died October 30, 994. The Catholic church celebrates his festival on the anniversary of his death. There is a paraphrase of the psalm called *Miserere* by St Wolfgang.

WOLFGANG, Prince of Anhalt, was born in 1492, and began to reign at the age of sixteen years. His court was at Cöthen. In bodily strength and dexterity, and chivalrous character, this prince had hardly his equal. His temper was bold and lively. In 1521, when Luther made his defence at Worms, before the emperor and diet, Wolfgang became his friend and disciple. During the persecutions of the Protestants, he declared that he "should prefer to clean boots, to leave his country and people, and to go off on foot, rather than to become untrue to the gospel." He was one of those who signed and presented, in 1530, the Confession of Augsburg, at the diet of Augsburg. When Charles V. and Ferdinand, at the instigation of the papal legates, endeavoured to oblige the Protestants by threats to give up their preaching, and join in the forms of the Roman Catholic worship, prince Wolfgang and the margrave George stepped up to the emperor, and firmly declared that "they would remain obedient to the emperor if he would leave them undisturbed in the exercise of their religious faith; but, before they would disown God and his gospel, they would submit to lose their heads." Wolfgang was one of the founders of the Smalkaldic league, and Luther used to call him, on account of his many journeys for the promotion of peace, the *legate of God*. Wolfgang was invited to Eisleben by count Mansfeld. Luther also repaired thither, and died there, February 18, 1546. When the war broke out, Wolfgang took part in the campaign which ended with the battle of Mühlberg. The emperor Charles V. now put him under the ban of the empire, on January 12, 1547, when he was at his castle in Bernburg, and gave his territories to one of his Spanish favourites. Wolfgang, on receiving the news of his outlawry, mounted his horse, and rode through the town towards the gate, singing Luther's celebrated hymn,

*Eine feste Burg ist unser Gott*
(A castle firm is our God).

He then retired into the Hartz mountains. In 1552, he was reinstated in all his rights. At the age of seventy years, he resigned the government to his cousins, but continued his care for schools and churches. He was the founder of the reformation in Anhalt, being assisted by his learned and wise cousin, George, who had been consecrated bishop by Luther and others, and had often preached. Wolfgang, for the last fifteen years of his life, kept his coffin in his sleeping chamber, with the inscription, "To me, to live is Christ, and to die is gain." (*Phil.* i, 21.) He died unmarried in 1566, and was buried in Zerbst, in the church of St Bartholomew.

WOLFL, Joseph, one of the most accomplished piano-forte players of his age, was born at Salzburg, in 1772, and was instructed by Mozart and Haydn. His uncommonly large and flexible hand was of great assistance to him. Mozart was much attached to him. At the age of eighteen years, he became chapel-master to the Polish count Oginski. The count lost his fortune when the Polish revolution broke out, in 1794, and, in 1795, Wölfl went to Vienna, and wrote several operas. In 1801, he went to Paris, where he obtained universal applause, and wrote for the *théâtre comique* an opera called *L'Amour romanesque*. In 1805, he went to England, where he died in 1812. The following anecdote, from Gerber's *Tonkünstlerlexikon*, shows his great skill. Being about to give a concert in Dresden, and the orchestra being assembled for rehearsal, there was no piano ready. At last one was brought, but tuned half a tone too low. In order not to detain the orchestra, he sat down to the instrument, and calmly played in C sharp the concert which was written in the C key, with perfect precision, purity and readiness. He composed operettas, concerts, and many other musical pieces.

WOLFRAM; an ore of tungsten. See *Tungsten*.

WOLFRAM VON ESCHENBACH. See *Eschenbach*, and *Wartburg*.

WOLGA, or VOLGA (the Russian *w* having the sound of the English *v*); a river of Russia, which has the longest course, and, with the exception of the Danube, the largest volume of water of any river in Europe. It is upwards of 2600 miles in length, and flows into the Caspian sea about fifty miles below Astrachan, by more than sixty branches. The Wolga rises in the government of Tver, from a number of lakes ninety-five miles above the town of Tver, at which place it is navigable. After receiving the Oka above Novgorod, and the Kama below Kazan, it becomes a considerable stream. During a great part of the year, it is shallow; but after the melting of the ice and snow in spring, its waters swell so much about May and June, as to overflow the banks. At this period, large vessels can come up to Astrachan. The country on the river is throughout fertile. By canals it is connected with the Neva and the Northern Dwina, thus affording a communication between the Caspian and Baltic, and Caspian and White seas. The river abounds in fish; and upwards of 10,000 boats are employed in the fishery. The common sturgeon and the beluga (see *Sturgeon*) afford the caviar and isinglass of commerce. Seals also ascend the river from the Caspian sea, and are taken by the fishermen.

WOLKE, Christian Henry, born in 1741, in Jever, in Germany, studied at the universities of

Göttingen and Leipsic for six years, and, in 1770, formed the plan of a school, in which the pupils should be educated conformably to nature. This plan brought him into connexion with Basedow, with whom he wrote, from 1770 to 1773, an elementary work for the purposes of education. Wolke subsequently took part in Basedow's Philanthropin (see *Schools*), at Dessau, where he continued until 1801. He then went to Petersburg, and afterwards to Leipsic; lived from 1805 to 1814 in Dresden, and the rest of his life in Berlin, where the society for the cultivation of the German language was established mainly by his endeavours, in 1814. Of his numerous writings, many relate to education, and contain, among other subjects, directions for an education conformable to nature; others relate to the purification of the German language. He also published, in 1804, a collection of poems in the Lower Saxon dialect, in order to show its harmonious character. But his chief work is Introduction to the general Language of Germany, to facilitate the Knowledge and Correction of at least 50,000 incorrectly formed German Words, and to save the Learner from a great Loss of Time and Money (1812). By ascertaining the roots of German words, he strove to determine their correct form, and to remove unnecessary letters, as well as those words which have been adopted from foreign languages into the German. This work is the fruit of long study, and contains much that is valuable, though the public may differ from him on many points. It is a book of much interest to the etymologist. His books for children, written in his new-fashioned language, could not well become useful. He died in Berlin, in 1825.

WOLLASTON, William, an eminent writer on ethics and theology, was born at Cotton Clanford, in Staffordshire, in 1659. He studied at Sidney college, Cambridge, and entered into holy orders. In 1688, the death of a relation put him in possession of considerable landed property, when he removed to London, and resided in Charterhouse square. His marriage, shortly after, with a lady of considerable fortune, having rendered him independent, he devoted his time to literary researches. His work, entitled the Religion of Nature delineated, procured the writer a distinguished station among the philosophers of the last century. His death took place in 1724.

WOLLASTON, William Hyde. M. D. and F. R. S., a distinguished chemist, was born in 1766; died Dec. 22, 1828. Having received his academical education at Cambridge, he proceeded M. D. in 1793, and attempted to practise as a physician at Bury St Edmunds, but with so little success, that he left the place in disgust, and removed to London. Soon after his arrival in that city, he became candidate for a place of physician to St George's hospital; but, failing in his attempt, he declared his determination never again to write a prescription, and turned his whole attention to the cultivation of natural science. Though almost every branch of science, at different times, occupied his attention, chemistry was that to which he seems to have been most ardently devoted; and it was by his investigations in that department of philosophy that he attained the most distinguished reputation. He was accustomed to pursue his chemical examinations on the smallest specimens of the substance which he was analysing; and he invented an ingenious method of determining the properties and constituents of very minute quantities of matter. He was endowed with bodily senses of extraordinary acuteness and accuracy, as well as with great general vigour of understanding, and had acquired a powerful command over his attention, and habituated himself to the most rigid correctness of thought and language. Among his inventions are his sliding rule, or scale of chemical equivalents (see *Equivalents, Chemical*); the goniometer, or instrument for measuring the angles of crystals; the camera lucida, &c.; and we are indebted to him for the discovery of two new metals, palladium and rhodium (see the articles), and of the malleability of platina. Doctor Wollaston was the author of a great number of communications to the Transactions of the Royal Society, of which he was a member, and of several articles in doctor Thomson's Annals of Philosophy, and other periodical works.

WOLLASTONITE. See *Tabular Spar.*

WOLLNER, John Christian von; notorious in the ignominious government of Frederic William II. of Prussia, the successor to Frederic the Great. He was the son of a clergyman, was born in 1727, studied theology in Halle, became minister in a village near Berlin, in 1759; was appointed counsellor of finance to prince Henry of Prussia, as he had shown some knowledge of political economy, made a noble in 1786 by the above-mentioned king, and, after receiving several appointments, became minister of state in 1788. In this situation, he exercised the greatest influence over the weak-minded monarch, by winking at his debaucheries, and resorting to low arts, such as frightening him with pretended apparitions. He caused the king to issue the notorious "religious edict," which established intolerance and mysticism, so contrary to the spirit of the time, and particularly of the monarchy. The present king Frederic William III. repealed this edict as soon as he ascended the throne, and dismissed this narrow-minded minister, who died in 1800, on one of his estates in Brandenburg. Wöllner was a member of several secret societies, including the Rosicrusians.

WOLODOMIR. See *Wladimir.*

WOLSEY, Thomas, cardinal, an eminent minister of state under Henry VIII., is said to have been the son of a butcher at Ipswich, where he was born in 1471. After receiving a grammatical education, he was sent to Magdalen college, Oxford, of which he was elected fellow. Being appointed master of a grammar-school dependent on the college, he had three sons of the marquis of Dorset under his care—a circumstance which induced that nobleman to present him with the living of Limmington, in Somersetshire, and, while here, he was put in the stocks in consequence of a drunken frolic. Although his conduct was by no means regular, his manners and appearance recommended him to Dean, archbishop of Canterbury, who made him his domestic chaplain. On the death of that prelate, he served Sir John Nanfan, governor of Calais, in the same capacity, by which patron he was recommended to Henry VII., who made him one of his own chaplains; and, in consequence of his able and expeditious conveyance of a despatch to the emperor at Bruges, he was rewarded with the deanery of Lincoln. On the death of Henry VII., he was introduced by Fox, bishop of Winchester, to Henry VIII., whose favour he courted so successfully, that he shortly obtained the first place in the royal favour, and became uncontrolled minister. His progress in advancement was very rapid. In 1510, he was introduced into the privy-council,

made reporter of the star-chamber, registrar, and afterwards chancellor of the garter. Ecclesiastical preferments were also heaped upon him, of which the principal were the bishoprics of Tournay and Lincoln, in 1513, and the archbishopric of York in 1514. The following year, the pope, to ingratiate himself with Henry, elevated him to the dignity of cardinal. His nomination to be the pope's legate *a latere* completed his ecclesiastical dignities, by exalting him above the archbishop of Canterbury. Naturally proud and ostentatious, no English subject, either lay or ecclesiastic, ever took so much state upon himself. He entertained a train of eight hundred servants, many of whom were knights and gentlemen. In 1515, archbishop Warham, whom he had much annoyed by his ambition, resigned the office of chancellor, to which Wolsey was appointed; and his administration in that capacity did him much credit. His legatine power, on the contrary, was exercised with great severity and oppression, and his eagerness for acquirement was unbounded. At the time when the celebrated rivalry between the emperor Charles V. and Francis I. rendered the friendship of Henry of great importance, Wolsey was treated with the greatest respect by both sovereigns, receiving pensions from each, as well as a third from the pope. He ultimately, however, favoured the side of Charles, who settled upon him the revenues of two bishoprics in Spain, and flattered him with hopes of the papal chair, which induced him to involve Henry in a war with France. Insatiable in the pursuit of ecclesiastical emolument, in 1519, he obtained the administration of the see of Bath and Wells, and the temporalities of the abbey of St Alban's, and afterwards enjoyed, in succession, the rich bishoprics of Durham and Winchester. By these means, his revenues nearly equalled those of the crown, part of which he expended in pomp and ostentation, and part in laudable munificence for the advancement of learning. He founded several lectures at Oxford, where he also erected the celebrated college of Christ-church. He also founded a collegiate school at Ipswich, and built a palace at Hampton court, which he presented to the king; but much of this was done by the seizure of minor religious establishments, for which he obtained papal authority. The critical affair of the divorce of queen Catharine was one of the first steps to his fall, as he was thought by the king to assist the delays of the court of Rome. The attachment of Henry to Anne Boleyn still further involved him; and, at length, in 1529, the dukes of Norfolk and Suffolk were sent to require the great seal from him, and he was ordered to quit York place, his palace in London, and retire to Esher, all his rich plate and furniture being seized in the king's name. After some suspense, owing to some remnant of attachment on the part of Henry, articles of impeachment were exhibited against him in parliament; but he was defended so vigorously by his retainer Cromwell, that they were withdrawn. His enemies then indicted him, under the statute of provisoes, for procuring bulls from Rome, which was made the grounds of a sentence of forfeiture. After the intended effect was produced of making him resign York palace and its riches to the king, he was granted a full pardon, and part of his revenues. In 1530, he was ordered to remove to his diocese of York, where he passed part of the year at his mansion at Cawood, until once more, on the first of November, in the same year, he was arrested for high treason, and set out under custody, for London. Indisposition of body, however, combining with mental distress, he was obliged to stop at Leicester, where he was honourably received at the abbey. His disorder increasing, a few days brought him to his end, on the 28th of November, 1530, in the sixtieth year of his age. Shortly before his decease, he exclaimed to the officer appointed to conduct him, "Had I but served God as diligently as I have served my king, he would not have given me over in my gray hairs." There has been considerable disposition in later writers to vindicate the character of this minister; and it must not be forgotten that, in the reign of Henry VIII., who had basely murdered him, of Mary, the daughter of the much injured Catharine, and of Elizabeth, whose mother (Anne Boleyn) was the chief instrument of his downfall, no justice could be expected to be rendered to the better traits of his mixed character. If he was loose in his morals, grasping in his ambition, and rapacious, he was liberal, and even profuse, towards his dependants and in his patronage of letters. He was enlightened far beyond the period in which he lived, and not only by fostering learning, but by causing many reforms to be made in the church, he prepared the way for that more extensive, though imperfect measure of reformation which took place in England after his death. As a diplomatist, it is difficult to say whether his abilities or industry was the most remarkable. To him England is indebted for the first notion of a vigorous police, and for a regular system in the administration of justice; and, in justice to his memory, it should be observed that, while his influence prevailed with Henry VIII., the ferocity of that royal butcher was kept in check. We have a Life of Wolsey by his gentleman usher Cavendish (new editions, with notes by Singer, 1827), and an account of the Life and Administration of Cardinal Wolsey, by Galt (1812, 4to., and 1817, 8vo.)

WOLSTONECRAFT, MARY. See *Godwin, Mary.*

WOLTMANN, CHARLES LOUIS VON, was born at Oldenburg, in 1770, and died in Prague, in 1817. He has written many books. His History of the Peace of Westphalia is a work of great merit, and far superior to his other productions.

WOLVERHAMPTON; a borough and market town of England, in the county of Stafford, 16 miles south of Stafford, and 123 north-west of London. It is said to have derived its name from *Wulfruna*, wife of the duke of Northampton, who built a monastery here in 996; whence its name of *Hampton* was changed to *Wulfrun's Hampton*, since corrupted into *Wolverhampton*. The town, which stands on an eminence, consists of several streets, diverging from the market-place, in the centre of which is a cast-iron pillar, forty-five feet high, supporting a gas lantern; it is irregularly paved, but well lighted with gas; and the houses are in general substantial and well built. It contains a neat theatre, and a public subscription library, over which is a suite of rooms in which assemblies and concerts take place. Races are held annually in August, and are well attended. In the year 1590, the greater part of the town was destroyed by a fire, which continued burning during five days. This town has been long celebrated for the manufacture of locks, which is carried on to a great extent, together with files, nails, screws, gun-locks, hinges, steel-mills, machinery, and furnishing iron-

mongery, with every branch of the iron trade; and brass, tin, Pont-y-Pool and japanned wares in great variety: it has also a large chemical laboratory. Many of the farmers in the neighbourhood are said to have their forges, where they work when not employed in the field. The Staffordshire and Worcestershire, the Birmingham, Essington and Wyrley Canals, pass close to the town, and unite about a mile to the north, by which a communication is opened with every part of the kingdom. By the reform act of 1832, it was constituted, with Sedgeley, Bilston, Willenhall, and Wednesfield, a borough, returning two members to parliament. Population, in 1841, 70,370.

WOMAN. Among savages, a slave, in the harem of the luxurious, but half-civilized East, a voluptuous toy, in the more refined countries of Christendom alone is woman the equal and companion of man. It is in the Christian home only that woman reigns—the mother, sister, wife and friend. It is a common remark that, in proportion as civilization advances, the respect and attention paid to the weaker sex are increased. In the savage state, the woman nurses her young, prepares the food, and carries the burdens of her master, whom she follows to war and the chase, shares all the privations and hardships of his precarious life, without participating in its excitements and pleasures, and serves and suffers without being thanked, rewarded or pitied. In a more advanced stage of society, as in ancient Egypt and India, the condition of woman, in private life, is that of an humble dependant, respected as a mother, but entirely subject to the will of the husband, and, in the higher castes, required to sacrifice herself upon his tomb. In China, the women of the lower classes are allowed to appear in public without restraint; but all the hard labour is put upon them, while the husband does the lighter work; the wife drags the plough, and the husband sows the seed. In the higher classes, the sex is subjected to a seclusion amounting almost to imprisonment. The temples are the only places to which they have free access. Elsewhere, they are not permitted to lose sight of their inherent inferiority: inhabiting a distinct set of apartments, not permitted to take their meals at the same table as their husbands, receiving no intellectual instruction, the degradation imposed (as is supposed) by nature is perpetuated by these laws which repress all their energies of mind and heart. With the two most polished and interesting nations of the ancient world, the female sex was on a very different footing, but in both less highly respected and less justly estimated, than with the polished nations of modern times. Greece, situated on the borders of Asia, then the seat of civilization, presents a singular mixture of Oriental manners with European institutions and habits. The condition of the Grecian women accordingly resembles this general condition of society, in a union of something of Eastern restraint and seclusion, with somewhat of the moral virtues and brilliant qualities of Western civilization. Among the Greeks, we find some noble examples of womanly heroism, of conjugal love, and sisterly affection, but nothing of that spiritualized respect for the female sex which prevailed in the middle ages, and nothing of that spirit of gallantry which characterized more modern times. Woman was not, in Greece, the ornament and refiner of society, the companion and friend of man. Homer represents women simple, noble and virtuous; Sophocles gives them something of a heroic cast; and, in Euripides, we find some models of female purity and lofty devotion: but no where do we discover that adoration of female beauty which is expressed in modern poetry. (See Schlegel, *Upon the Representation of the Female Character in the Greek Poets.*) The Grecian women were secluded in their own apartments, and passed their time chiefly in directing the labours of their female slaves. They rarely or never appeared in the company of the men; and this separation was carried so far that the Grecian houses were usually divided into two parts, in which the two sexes had distinct mansions assigned them. The part assigned for the women, the *gyneceon*, or *gyneconitis*, was the farthest from the street, and usually in the uppermost rooms. The unmarried women were subjected to particular restrictions, and were almost entirely confined at home. When the women went abroad, or appeared in public, they covered their faces with veils, and were generally accompanied by attendants. They were not permitted to appear at the theatre, unless at the representation of tragedies; but they formed religious processions, and took part in religious festivals. The want of cultivated females of virtue was supplied by the *hetæræ*, who were often highly distinguished for their talents and accomplishments. (See *Hetæra.*) Among the celebrated women of this class are Aspasia, the mistress of Pericles, Lais, Phryne, and others. (See Böttiger's *History of the Female Sex*, in the 2d and 3d volumes of the *Attisches Museum.*) The Lacedæmonian women observed fashions quite different from their neighbours: their virgins went abroad barefaced, while the married women covered themselves with veils; the former designing to get husbands, the latter aiming to keep those they had. The Spartan maidens, says Plutarch (Life of Lycurgus), exercised themselves in running, wrestling, throwing quoits, casting darts, that they might be more healthy and vigorous: and they were also accustomed to dance naked at solemn feasts and sacrifices. When, however, the laws of Lycurgus were neglected, and the Spartans degenerated from the strict virtue of their forefathers, these practices contributed to render the prevailing licentiousness more universal. The Romans were, in many respects, in advance of their more polished neighbours in the treatment of their women. The Roman women appeared more in society: they were allowed to be present at feasts and entertainments, and at public spectacles, and, in general, associated more with men than the Grecian women. They took a more active part in public matters; and the institution of the vestal virgins has no example in the manners of the Greeks. Hence we find many models of true feminine greatness among the Roman women. In the period of the republic, they lived, however, considerably retired, occupied with domestic labours, and the education of their children, and distinguished for simplicity of appearance and rigid virtue. But with the increase of wealth, luxury and corruption, a great change took place; and, if Cornelia may be considered the representative of free and virtuous Rome, Messalina must be regarded as the emblem of the polluted epoch of the empire. The influence of Christianity gave woman a new station in society, broke her chains, and released her from the odious and degrading restrictions in which she had almost become the soulless thing which she had been represented to be. As man ceased to be a mere citizen of his own country, and felt himself to be a citizen of the world, so woman

was restored to her natural rights Other causes co-operated with the spirit of Christianity to establish a just and true equality of the sexes. The German or Teutonic nations were the first who led the way in this revolution; and Tacitus remarked upon the estimation in which the female sex was held among them. The age of chivalry shows the effect of these two influences, mutually contributing to each other's developement; and the whole of Europe soon experienced the operation of these causes. In fact, the very peculiarities of the Christian religion, its spirit of love, of tenderness, and of charity, wholly unknown to the ancient nations, led to a submission of physical force and intellectual vigour, to feelings of kindness and affection. "In every age and country," says Gibbon, "the wiser, or at least, the stronger, of the two sexes has usurped the powers of the state, and confined the other to the cares and pleasures of domestic life. In hereditary monarchies, however, and especially in those of modern Europe, the gallant spirit of chivalry, and the law of succession, have accustomed us to allow a singular exception; and a woman is often acknowledged the absolute sovereign of a great kingdom, in which she would be deemed incapable of exercising the smallest employment, civil or military. But as the Roman emperors were still considered as the generals and magistrates of the republic, their wives and mothers, although distinguished by the name of Augusta, were never associated to their personal honours; and a female reign would have appeared an inexpiable prodigy in the eyes of those primitive Romans who married without love, or loved without delicacy and respect." The exaggerated spirit of adulation which prevailed in the age of chivalry, was yet far from giving the female sex its true position; and the age of frivolous gallantry which succeeded it, was a natural result of the former. It is by observing a proper medium between servitude and deification, by treating the sex as women and not as slaves or goddesses, by cultivating their minds and hearts, as well as by adorning them with the graceful accomplishments, that our own times have, in some measure, restored this part of our race to their rights and duties. Consult on this subject, Alexander's *History of Women* (2 vols., 4to., 1779); and Ségur, *Les Femmes* (3 vols., 1802); see, also, our articles *Husband and Wife*, *Marriage*, *Polygamy*, and *Divorce*.

*Woman*, in physiology. Besides the difference of the sexual organs, the woman exhibits other peculiar characters, which distinguish the sexes. In the female, the head is smaller, the chest narrower, the pelvis broader, the limbs more delicately formed and more rounded, and the gait peculiar, on account of the breadth of the pelvis. The skin is soft, the hair of the head finer and longer, the muscular system little developed, the voice an octave higher than that of the male, and the nervous system predominating: their sensibility is consequently greater than that of the other sex. The rounded form and brilliant whiteness which characterize females, are owing to the peculiarity of their lymphatic and cellular systems; and, their sanguineous system being less vigorous than in man, they are less liable to acute inflammations. Born to feel and to inspire the kind and tender affections, they are exempt from the gloomy and fierce passions which characterize the bilious temperament; and love, jealousy, and maternal affection, are the deepest springs of emotion in the female heart. Their delicate and peculiar organization modifies the general course of disease with them, and renders them liable to some from which the other sex is exempt. The period of puberty is more often attended by disease in the female sex. It is characterized by the developement of the breasts, and other physical changes, together with a general revolution in the tastes and feelings of the individual. (See *Puberty*, and *Catamenia*.) Ripe for the burden of maternity, the woman becomes a mother only through sufferings and pangs. The mother is exposed to yet new maladies as a nurse; and, when nature calls the child to other sources of nourishment (see *Weaning*), to new cares and precautions for herself and her infant. Having passed these successive periods of life, at the age of forty-five or fifty, another change of the system succeeds, attended with so many dangers, that this epoch has received the name of the "critical age." The physical changes which now take place are often accompanied with an unfavourable moral change, and both combine to render more dangerous the maladies to which this period is particularly liable. Great care should now be taken to be warmly clothed, to avoid violent excitements, to enjoy pure and wholesome air; and, this period passed, the health becomes confirmed, and life is often prolonged to an advanced age.

WOMB. See *Uterus*.

WONDERS OF THE WORLD, Seven. See *Seven Wonders*.

WOOD. (For the structure of wood, see the article *Plants*; for the use of wood as fuel see *Fuel*.) We shall now give the character of some of the principal sorts of wood used in the arts. The part preceding the account of the fancy woods is abridged from Bigelow's Technology.

*Oaks* are generally distinguished for great strength, but are coarse-grained and prone to warp, and crack, under changes from moisture to dryness. The oak is prized in ship building beyond any native timber. The white oak (*quercus alba*) is employed for the keels, side-timbers, and planks of vessels, also for frames of houses, mills, and machinery requiring strength; for wagons, parts of carriages, ploughs, and other agricultural instruments. Large quantities are consumed for the staves and hoops of casks, for which they furnish one of the best materials. The bark of the black oak (*quercus tinctoria*) furnishes the *quercitron* used by dyers. Most of the species of oak are employed in tanning, and they all furnish a valuable fuel.

*Hickory*, or *Walnut*. The wood of the different species of walnut or hickory (*juglans*, or *carya*) is eminently distinguished for weight, tenacity, and strength. It has, however, important defects. It warps and shrinks greatly, decays rapidly when exposed to the weather, and is very liable to the attacks of worms. On these accounts, it is never used for house or ship building, but is chiefly employed for minor purposes, where strength is the chief requisite, as in the teeth of mill-wheels, screws of presses, handspikes, capstan bars, bows, hoops and handles of tools. As fuel, the hickory commands a higher price than any other wood.

*Ash*. The white ash (*fraxinus Americana*), and some other species, are of great utility in the arts. Ash wood is strong, elastic, tough and light, and splits with a straight grain. It is also durable and permanent in its dimensions. It furnishes the common timber used in light carriages, for the shafts, frames, springs and part of the wheels. Flat hoops, boxes, and the handles of many instruments are

made of it. It is almost the only material of oars, blocks of pulleys, cleats, and similar naval implements in places where it can be obtained.

*Elm.* The common American elm (*ulmus Americana*) is valued for the toughness of its wood, which does not readily split. On this account, it is chiefly used for the naves of carriage wheels.

*Locust.* The common locust (*robinia pseudacacia*) is one of the hardest, strongest, and most valuable of American native trees. The larger pieces of its timber are used in ship-building, and the smaller pieces are in great request to form the treenails or pins which confine the planks to the timbers. Locust wood is exceedingly durable, when exposed to the weather, and forms excellent fuel.

*Wild cherry-tree.* The wood of this tree (*prunus Virginiana*) is of a deep colour, hard, durable, and, when properly seasoned, very permanent in its shape and dimensions. In the manufacture of cabinet work, it is sometimes used as a cheap substitute for mahogany.

*Beech.* The wood of the red beech (*fagus ferruginea*) is liable to decay when exposed to alternate moisture and dryness. It does not, however, readily warp, and, being smooth-grained, it is used for some minor purposes, such as the making of planes, lasts and card-backs. It forms a very good fuel.

*Bass-wood.* The American linden or bass-wood-tree (*tilia Americana*) produces a fine-grained wood, which is very white, soft, light and flexible. It is sometimes employed for furniture, but its chief use is to form the panels of coach and chaise bodies, for which its flexibility makes it well suited.

*Tulip-tree* (*liriodendron tulipifera*). The boards of this tree are sold under the name of *white-wood*, and erroneously under that of *poplar*. Its wood is smooth, fine-grained, easily wrought, and not apt to split. It is used for carving and ornamental work, and for some kinds of furniture.

*Maple.* The rock maple (*acer saccharinum*), and several other species, afford wood which is smooth, compact and hard. It is much used for cabinet furniture, and is a common material for gun-stocks. The wood in some of the old trunks is full of minute irregularities, like knots. These, if cut in one direction, exhibit a spotted surface, to which the name of *bird's eye* maple is given; while, if cut in another direction, they produce a wavy or shaded surface, called *curled* maple. This last effect, however, is more frequently produced by a mere serpentine direction of the fibres. The distinctness of the grain may be increased by rubbing the surface with diluted sulphuric acid. Maple wood forms a good fuel. It is not very lasting when exposed to the weather. The sap of the rock maple, and of one or two other species, yields sugar on being boiled.

*Birch.* The white or paper birch (*betula papyracea*) has properties similar to those of the maple, and is appropriated to the same uses. Its cuticle or outer bark is made, by the Indians, into canoes. The lesser white birch (*B. populifolia*) is a perishable tree of little value. The black birch (*B. lenta*), known for its aromatic bark, affords a firm, compact, dark-coloured wood, much valued for furniture, and sometimes used for screws and implements requiring strength. The yellow birch (*B. lutea*) is applied to the same uses as the last, and makes good fuel.

*Pine.* The pines exceed all native trees for the value and variety of their uses. The white pine (*pinus strobus*) has a very tall, straight trunk, the wood of which is light, soft, homogeneous, and easy to work. It is remarkably exempt from the common fault of timber—that of decaying in the open air, and of changing its dimensions with changes of weather. On these accounts, it is extensively employed for most of the common purposes of timber. The pitch pine (*pinus palustris* L.) yields vast quantities of tar and turpentine. Its wood is appropriated to the same objects as that of the white pine, but is harder and stronger, and therefore preferred for planks, spars, floors, decks, &c. Many other species of pine exist, partaking qualities like those already described, but most of them harder than the white pine.

*Spruce.* The black and white spruce belong to the race of trees commonly called *firs*. They are both valuable, but the black spruce (*pinus nigra*) unites, in a peculiar degree, the qualities of strength, elasticity and lightness, together with the power of resisting exposure to the weather. It is much sought after for the smaller spars of vessels, such as the booms, yards, and topmasts.

*Hemlock.* The hemlock-tree (*pinus Canadensis*) is inferior to the other firs in quality, though it grows to a large size. It is coarse-grained, often twisted, and cracks and shivers with age. It furnishes an inferior sort of boards, used in covering houses. Its bark is valuable in tanning.

*White cedar.* This tree (*cupressus thuyoides*) occupies large tracts denominated *cedar swamps*. The wood is soft, smooth, of an aromatic smell, and internally of a red colour. It is permanent in shape, and very durable, and esteemed as a material for fences. Large quantities of shingles are made of it. It is a favourite material for wooden wares, or the nicer kinds of coopers' work.

*Larch.* The larch (*pinus microcarpa*) wood is strong, elastic and durable, and is highly prized, in places where a sufficient quantity can be obtained, for naval and civil architecture.

*Willow.* The most common kinds of salix or willow is soft, light and spongy. Willow charcoal is used in the manufacture of gunpowder. The osier, and some other species, with long slender shoots, are extensively cultivated to form wicker work, such as baskets, hampers, and the external coverings of heavy glass vessels.

*Mahogany.* In the manufacture of cabinet furniture, mahogany (*swietenia mahagoni*) has taken precedence of all other kinds of wood. Its value depends not so much on its colour as on its hardness, and the invaluable property of remaining constant in its dimensions, without warping or cracking, for an indefinite length of time. The same qualities which render it suitable for furniture have given rise to its employment for the frames of philosophical instruments, and of delicate machinery. Mahogany is imported from the West Indies and different parts of Spanish America.

*Box-wood.* The box-tree (*buxus sempervirens*) wood is of a well-known yellowish colour, hard, compact, smooth, tough, and not liable to crack. Musical and wind instruments are commonly made of it; also mathematical measuring instruments. The handles of many tools, and various articles of turners' work, consist also of this material. Wood engravings are cut upon the end of the grain of box-wood.

*Lignum vitæ.* The wood of the *guaiacum officinale* is employed in the arts under this name. It is dark-coloured at the heart, strong, exceedingly

hard, and so heavy as to sink in water. It is impregnated with resin, and, on this account, durable in liquids. Handles of tools, boxes of gudgeons, wheels of pulleys, castors, balls, stopcocks, mallets, &c., are made of it. It is imported from the West Indies and South America.

We shall now give an account of some of the principal woods used in cabinet work, taken from the Library of Entertaining Knowledge.

*Fancy Woods.* Even at a comparatively early stage of the arts, mankind appear to have made use of the bright or variegated colours of wood, to give beauty both to their dwellings and their furniture. The temple built by king Solomon was overlaid, on the inside, with boards of cedar—"all was cedar; there was no stone seen"—and, among the most ancient specimens of ornamental furniture that are to be met with, we find that attempts have been made to heighten the effect by the contrast of various kinds of wood. Though, both in the materials and the designs, these are inferior to the productions of modern art, many of the cabinets which are still preserved have much higher claims to notice than their mere antiquity. In all these works, a veneer, or thin plate of the fancy wood, is laid down in glue upon a surface of a plainer description. This process is, of course, cheaper than if the whole work were made of the solid fancy wood. The beauty of fancy wood arises, in many sorts, from its being cross-grained, or presenting the fibres endways or obliquely to the surface. These different positions of the fibres, as well as their different colours in grained woods, give a clouded and mottled variety to the surface; and, when some of the parts are partially transparent, as in the case with fine mahogany, the surface gives out a play of different tints, as the observer shifts his place, or the light falls upon them, and, consequently, is reflected at different angles. When mahogany was first introduced as a cabinet timber, it seems to have been in the dark-coloured, hard, and straight-grained trees, which are now used for chairs and other articles, in which the solid timber is preferred; and on that account, mahogany was not much used in combination with other woods. When, however, its great value was known—the ease with which it can be cut, the improvement that varnish gives to its colours, the firmness with which it holds in glue, and the improvement which, when properly taken care of, it gains in time—it was found that good mahogany was much too valuable a timber for being used solid, and it began to be employed as the staple timber in veneering. Other foreign woods, some of them lighter and others darker, were employed for borders and ornaments; but mahogany was used for the body of the work; and when it came to be so used, a great revolution was effected in the art of cabinet-making. On the first introduction of mahogany, the same process was resorted to, that had before been practised with the walnut and other woods, and effect was sought to be produced by quartering panels, forming them of gyrony* of sectors, with the grain in opposite directions, and other fantastic and unnatural arrangements; but, in course of time, a better taste was introduced, and the object was to make the whole surface have the same appearance as if the work had been made solid out of the rich timber. This was one step towards the attainment of a purer style; but the continuity of the surface was still interrupted by ill-sorted additions. The breadth of the mahogany, which would in itself have been beautiful, was broken by hands and strings of other wood, without much regard to the harmony of the colours; and thus that which, with the veneer alone, would have been chaste and classical, was reduced to a piece of patch-work. The veneering, whether done in mahogany or any other wood, was, at first, very expensive. The veneers were cut by the hand; and thus the piece cut off was of unequal thickness in different parts, the wood was mangled by the operation of cutting, and the finest pieces, which, as has been said, are cross-grained, or have the fibres across their thickness were always in danger of being broken. It had been found that veneers, laid upon good bodies of timber, whether of the more coarse mahoganies or of any other kind, were better, in point both of beauty and of standing without warping, than solid timber; but the cutting of the veneers by the hand was very laborious, and wasted the timber, so that, though the plan was a good one, it was expensive. When the harder and more unmanageable species of fancy woods came to be used, the difficulty and expense were further increased; and though more beauty and variety were imparted to cabinet furniture, they were imparted at a corresponding increase of expense. Nor was it till the invention of machinery for the cutting of wood into veneers, by Mr Brunel, that we had the full advantage of the beautiful art of veneering. The machinery used for this purpose consists of circular saws, driven by mechanical power; and they have so diminished the price of cutting veneers that the saving is immense. The quantity of veneer that can, by means of these machines, be sawed out of a given quantity of timber, is astonishing. Those who are reckoned respectable cabinet-makers do not, in general, wish to have more than eight or nine thicknesses out of the inch; but those who manufacture furniture for occasional sale, and are, in consequence, indifferent as to the quality of the timber, and the durability of their work, often have the inch cut into fifteen or sixteen thicknesses. Veneering in fancy woods has sometimes been compared to gilding and plating; but the process does not gain by the comparison, as the covering of one wood with another is a much nearer approach to solidity than the covering of one metal with another. While the cabinet article is kept in such a state that the glue is not dissolved, the covering of beautiful wood does not wear out; and thus, with a vast saving in the more costly material, there is the same durability as if nothing but that material had been used for the whole. There is another advantage in the use of fancy woods on the surface—the body of the article upon which the fancy wood is laid can be much better put together than if it had formed the external part of the article. Where that is the case, dovetails, or mortises, cannot be wedged without an external seam; but, in veneering, the body of the article can be put together with every degree of care and strength, and the veneer will hide the whole.

*Mahogany* is of universal use for furniture, from the common tables of a village inn to the splendid cabinets of a regal palace. But the general adoption of this wood renders a nice selection necessary for those articles which are costly and fashionable. The extensive manufacture of piano-fortes has much increased the demand for mahogany. Spanish mahogany is decidedly the most beautiful; but oc-

* A term of heraldry, in which a shield is formed in sectors from the centre.

casionally, yet not very often, the Honduras wood is of singular brilliancy; and it is then eagerly sought for, to be employed in the most expensive cabinet work. A short time ago, Messrs Broadwood, distinguished English makers of piano-fortes, gave the enormous sum of £3000 for three logs of mahogany. These logs, the produce of one tree, were each about fifteen feet long, and thirty-eight inches wide. They were cut into veneers of eight to an inch. A new species of mahogany has been lately introduced in cabinet work, which is commonly called *Gambia*. As its name imports, it comes from Africa. It is of a beautiful colour, but does not retain it so long as the Spanish and Honduras woods.

The wood most in use for cabinet work, next to mahogany, is *rose-wood*. The name of this species of wood is derived from its fragrance; and it has long been known to the cabinet-makers of England and France. It was first introduced, it is said, from the isle of Cyprus; though the great supply now comes from Brazil. The width of the logs imported into England averages twenty-two inches, so that it must be the produce of a considerable tree. The more distinct the darker parts are from the purple-red, which forms the ground, the more is the wood esteemed. It is ordinarily cut into veneers of nine to an inch, and is employed, in this way, for all the larger furniture, such as tables, but solid for the legs of chairs, tables and cabinets.

*King-wood* is generally used for small cabinet works, and for borderings to those which are larger. It is extremely hard. The tree which produces it is small, as the sticks are seldom brought to England more than five inches wide, and four feet long. Its colour is of a chocolate ground, with black veins, sometimes running into the finest lines, and at others, more spread over the ground, as in rose-wood. The botanical name of the tree which produces this wood is not known. It comes from Brazil. And here we should remark the exceedingly imperfect state of our knowledge with regard to the species of trees which produce the fancy woods, so extensively used in cabinet work. The attention of botanists who have described the productions of South America and Australasia, from which these fine woods come, has not been directed to this point: and the commercial dealers in these woods have paid no regard to it.

*Beef-wood*, principally used in forming borders to work, in which the larger woods are employed, is intensely hard and extremely heavy. Its colour is a pale red, not so clouded as mahogany. The timber arrives in England in logs of about nine feet long, by thirteen or fourteen inches wide. The tree which produces it is not known in botanical description, but it is a native of New Holland.

*Tulip-wood* would appear to be the produce of a tree little exceeding the character of a shrub; for it arrives in sticks of about five inches diameter, seldom more than four feet in length. It is very hard, and of a clouded red and yellow colour. Its principal use is in bordering, though it is employed in smaller articles, such as caddies and ladies' work tables.

*Zebra-wood* is the produce of a large tree, and is received in logs of two feet wide. It is a cheap wood, and is employed in large work, as tables. The colour is somewhat gaudy, being composed of brown, on a white ground, clouded with black, and each strongly contrasted, as its name imports, derived, as it is, from the colours of the Zebra.

*Coromandel-wood* is used in large works, like zebra and rose-wood. It is inferior to rose-wood in the brilliancy and division of its colours, having a dingy ground, and sometimes running into white streaks. The tree which produces it is of a large size.

*Satin-wood* is well known for its brilliant yellow colour, with delicate glowing shades. It is now not much used in cabinet work. The timber arrives in logs two feet wide, and seven or eight feet long.

*Sandal-wood* is of a light-brown colour, with brilliant waves of a golden hue, not unlike the finest Honduras mahogany. It is about the same size as satin-wood.

*Amboyna-wood* is now very much used in cabinet work. It is of various colours, and the shades are generally small. It arrives in logs of two feet wide.

*Snake-wood* is extremely hard, of a deep-red colour, with black shades. It is principally used for bordering and small work.

*Hare-wood* something resembles satin-wood in the arrangement of its waves, but its colour is different, being of a light-brown ground.

*Botany bay oak* forms very beautiful furniture. The ground is a uniform brown, with large dark blotches.

*Ebony* is also much used. Of the several cabinet-makers' woods bearing this name, there are the African cliff ebony, which is black, with a white spot; and the spotted ebony, a very beautiful wood, and extremely hard, (more so than the common ebony), of which the ground is black, with brown and yellow spots.

*Acker-wood* is the produce of a large tree, and is of a cinnamon colour.

*Canary-wood* is of a golden yellow.

*Purple-wood*, which has been lately introduced, is of a purple colour, without veins. This appears to be the produce of a thorn of tropical countries, being only four inches wide. These three woods have been little used in furniture, but have been lately employed in mosaic floors.

*Bird's-eye maple* (its appearance is described in its name), which has also been so employed, is a narrow and long wood.

*Calamander-wood*. There is a very beautiful wood of this name growing in the island of Ceylon. The wood is very hard and heavy, and of singularly remarkable variety and admixture of colours. It is very difficult to describe this; nay, impossible to convey to those who have not seen it an idea of the manner in which the shades run into one another. The most prevailing of these is a fine chocolate colour, now deepening almost into absolute black, now fading into a medium between fawn and cream colours. In some places, however, the latter tint is placed in more striking, though never quite in sudden, contrast with the richest shades of the brown. The variations are sometimes displayed in clustering mottles, sometimes in the most graceful streaks. There is not, however, any thing in the least gaudy or fantastic in the general result. It certainly arrests the eye, but it is from the rich beauty of the intermingled colours, not from any undue showiness. This wood takes a very high polish. It is wrought into chairs, and particularly into tables, and even large folding-doors have been made of it.

*Partridge*, *leopard*, and *porcupine* woods are very rarely used. Their names are derived from a supposed similarity of their colours to those of the animals whose denominations they bear.

WOOD, ANTHONY, an eminent English antiquary and biographer, born at Oxford, in 1632, entered of Merton college, Oxford, in 1647. Having graduated M. A., he set himself to transcribe the monumental inscriptions and arms of the parishes of Oxford, and, in 1660, obtained permission to consult the registers and other records of the university in the Schools' Tower. These researches, added to others in the Tower of London and the Cotton library, produced the materials for his History and Antiquities of the University of Oxford. The copy of this work, which he had compiled with greater industry than skill, was purchased of him by the university for 100 pounds. It was written in English; but as it was thought proper that it should appear in Latin for the information of foreigners, it was translated into that language, under the inspection of doctor Fell, and published at the Oxford press, under the title of *Historia et Antiquitates Universitatis Oxoniensis* (2 vols., folio.) Of this version he often complained, as exhibiting various mistakes and omissions. In 1691, appeared his more popular and important work, *Athenæ Oxonienses*, or an account in English, of almost all the writers educated at Oxford, and many of those at the university of Cambridge. A prosecution was soon after instituted against him in the vice-chancellor's court, for an imputation, in this work, affecting the character of the deceased earl of Clarendon; and he was sentenced to expulsion until he should formally recant it. His work affords valuable materials for biography. He died in 1695, and left his books and papers to the university of Oxford. A third edition of his *Athenæ Oxonienses*, corrected from the author's manuscripts, and continued, appeared under the superintendence of doctor Bliss (1813—1817, 3 vols., 4to.)

WOOD, ROBERT, an accomplished scholar and statesman, was born at Riverstown, in the county of Meath, in 1716. In 1751, he made the tour of Greece, Egypt, and Palestine, in company with Bouverie, and Dawkins, and, at his return, published a splendid work in folio, entitled the Ruins of Palmyra, otherwise Tadmor in the Desert (fol., 1753), being an account of the ancient and present state of that place, with fifty-seven elegant engravings; republished in Paris in 1819 (4to.) This was followed by a similar Description of the Ruins of Balhec, with forty-six plates (1757). In 1759, he was appointed under secretary of state by the earl of Chatham, at which time he was preparing for the press his Essay on the Life and Writings of Homer, which did not appear until after his death, which took place at Putney, in 1771. This work has been translated into French, Italian, Spanish and German; the latter by Heyne, with a preliminary essay.

WOOD ENGRAVING. Some account of this may be found in the article *Engraving;* subdivision, *Engraving on Wood.* See also the article *Printing.* We add here, that one of the chief advantages of wood-cuts is, that they may be printed by the same process as common letter-press. In a copperplate, as may be known to most of our readers, the parts which are intended to leave an impression upon the paper are cut into copper, so that, after the ink is spread over the engraving, it has to be rubbed from all the prominent or uncut portion of the surface, in order that it may remain only in these hollows. Several disadvantages result from this. In the first place, the plate is very soon worn, or the fineness of the lines impaired by this continual abrasion,* Secondly, from the method of inking being so different from that which is used in printing letter-press, where the parts of the type that make the impression, are the prominences and not the hollows, and the ink, therefore, is allowed to remain where it naturally adheres on being applied by the ball or roller, the copperplate engraving must always be printed by itself, and generally on a separate page from the letter-press. The only way of giving both on the same page, is to subject the paper to two successive impressions, which, besides the inconvenience of the operation, almost always produces an unpleasant effect from the difference of colour in the two inkings, and the difficulty of adjustment. A wood-cut has none of these disadvantages. As the impression is to be made by the prominent parts of the wood, these, which receive the ink directly from the roller, are allowed to retain it, just as in the case of ordinary types; and there is, therefore, nothing of that process of rubbing at every impression, which so soon wears out a copper-plate. The consequence is, that while rarely more than two thousand impressions can be taken from a copper engraving before it requires to be retouched, a wood-cut will yield, perhaps, fifty thousand. Then the latter, from the manner in which it is to be inked, admits of being set up, if necessary, just like any of the other types, in the midst of a common page, and so of being printed both in the most convenient place, and without any separate process. The block must, of course, for this purpose, be made very exactly of the same thickness or depth as the other types, along with which it is placed.

In a "Book of Trades," published at Frankfort, in 1654, which was illustrated by a number of spirited wood-cuts from the designs of Jost. Ammon, there is a representation of the *formschneider* or wood-cutter. He sits at a table holding the block in his left hand, upon which he is cutting with a small graver in his right. Another graver, and a sort of googe or chisel lies upon the table. If we enter the work-room of a wood-engraver of the present day, we shall find the instruments by which he is surrounded, nearly as few and as simple. His block rests upon a flat circular leather cushion filled with sand; and this so completely answers the purpose of holding the block firmly, and yet allowing it to be moved in every direction, that it is expressively called the wood-cutter's third hand. His cutting instruments are of three sorts: the first, which is called a *graver*, is a lozenge-shaped tool, used for outlines and fine tints; the second, called a *scauper*, which presents a triangular point and edges, is used for deeper and holder work: and the third, which is a *flat tool* or chisel, is employed in cutting away those parts of the block which are to be left entirely light. There are several varieties of size in these tools, but it is understood that the best artists employ the fewest tools. Upon the block, which presents a perfectly smooth surface, the design has previously been drawn, in most cases with a black-lead pencil, by a draughtsman, who is generally an artist distinct from the wood-engraver. It is the business of the cutter, as we have before mentioned, to leave all the lines upon the block which the draughtsman has traced with his pencil; and to do this, he of course cuts away all the parts which form the

* Engraving on steel is, in a great measure, free from this disadvantage.

spaces between the various lines of the drawing. The lines thus stand up, as it is called, in relief; and when ink is applied to them hy the printer, in the same way as he applies it to his metal types, they transfer the ink to the paper placed over them upon being subjected to an adequate pressure. We should mention that in this, as in every other species of engraving, the drawing upon the wood is a reverse of the object copied, in the same way as a mirror shows the reverse of the human countenance; when the impression is taken from the engraving, the object is correctly represented, in the same way as the reflection of any object in a second mirror placed opposite the first would also give it correctly.

The wood which is used for the purpose of engraving, is that of the hox-tree. A considerable quantity of box is imported into this country, as the tree with us scarcely ever reaches a sufficient size. The best logs are shipped from Odessa, but very few are adapted for the purpose of the wood-engraver, and the inferior qualities are chiefly used for turnery. The blocks for engraving are cut directly across the grain, so that not many trees furnish pieces sufficiently large for some wood-cuts, and in that case two or even three smaller pieces are fitted together with great exactness. The price of hox for engravers has advanced considerahly within the last few years, owing to the increased demand.

WOODBINE. See *Honeysuckle.*

WOODBRIDGE; a market-town in the county of Suffolk, seventy-seven north-east hy east from London. It is a place of considerable antiquity, pleasantly situated on the north side of the river Deben, on the slope of a hill, which commands a fine view down the river to its influx into the sea. The town consists of two principal streets, a spacious square called Market Hill, and several narrow streets and lanes, well paved and lighted. The river near its mouth is called Woodbridge Haven, and is navigable for vessels of 120 tons burden up to the town, which carries on a considerable traffic with London, Hull, Newcastle, and the continent, and has several docks for building vessels, with commodious wharfs and quays. The principal exports are corn, flour, and malt; and the imports coal, timber, foreign wine, spirits, grocery, drapery, and ironmongery. The shipping is greatly on the increase. Population in 1841, 4954.

WOODCHUCK. See *Marmot.*

WOODHOUSELEE. See *Tytler.*

WOODPECKER (*picus*). These birds have a stout angular bill, wedge-shaped at the apex, straight, or, in a few species, slightly arcuate, and furnished with feathers at the base. The tongue is long, worm-like, capable of being protruded beyond the beak, and terminates in a horny and very acute point, barbed with reflexed spines, like an arrow, and serves to transfix insects. This operation is accomplished by the peculiar form of the os hyoides, the two branches of which are prolonged around the skull, passing over the summit, till they reach the base of the hill, and a corresponding muscular arrangement. The tarsi are short and naked; the toes, two before and two behind, long-armed, with strong, compressed, hooked nails, every way adapted for clinging. The tail, besides, serves the purpose of a third member, having the shafts of the feathers stiff, elastic and projecting, acting the part of a hracket in supporting the bird, when thrown inward against the trunk of a tree. The species are numerous, and are found in all parts of the globe; at least in all that are covered by forests. They cling to the trunks of trees, holding their bodies upright, and strike holes in the bark, in search of insects which take shelter in the crevices. They nestle in holes of trees, which they excavate by repeated blows with their beaks. Some occasionally feed on fruits and berries. Their plumage is very much varied, composed of the most striking colours, blue only excepted. There are numerous and very beautiful species in the United States, such as the ivory-billed, pileated, hairy, downy, Carolina, red-headed, red-cockaded, and yellow-bellied. The golden-winged woodpecker, or flicker, is remarkable for having the bill slightly arcuated. In Canada and the extreme northern parts of the United States, a species is found having but three toes; and others exist, in the East Indies, having the fourth toe very short, or merely rudimentary.

WOODS, LAKE OF THE. See *Lake of the Woods.*

WOODSTOCK; a borough and market-town of England, in Oxfordshire, sixty-two miles west-north-west from London. Woodstock has two manufactures, those of polished steel and gloves; the former much decayed; the latter was begun here about seventy years ago. Population in 1841, 1412. Previous to the passage of the reform act in 1832, it returned two members to parliament, who were chosen by about 400 voters. By that act it was deprived of one member.

WOOL; a term used very indefinitely. It is applied both to the fine hair of animals, as sheep, rahhits, some species of goats, the vicugna, &c., and to fine vegetable fibres, as cotton (the German name of which is *tree-wool—Baumwolle*). In this article, however, we refer only to the wool of sheep, a snhstance which, from the earliest periods, has been of primary importance, because it has always formed the principal material of the clothing of mankind in most temperate regions. What Columella says (lib. viii, cap. 2), still remains true; *Post majores quadrupedes, ovilli pecoris secunda ratio est, quæ prima sit, si ad utilitatem magnitudinem referas. Nam id præcipue nos contra frigoris violentiam protegit; corporibusque nostris liberaliora præbet velamina.* We have given, in the articles *Sheep*, and *Sheep-Raising*, some historical and other information on this interesting subject, and must refer the reader to that article, as forming, in some degree, one whole with the following. On those parts of the sheep where wool does not grow, it has hair, like other animals, as on the nose and the lower part of the legs. Those parts of the skin which cover flesh, always produce wool in the healthy state of the animal. The fibres of the wool are either straight and lank, or crooked and interlaced. The division into locks, formed by the coherence of the single fibres, varies in every species of wool, and forms what is called the *staple.* The body of wool, which is shorn in connexion from one animal, is called a *fleece.* If we imagine a fleece spread out, the wool of the head, the legs, the belly, and the tail (which is the worst), form the exterior parts or margin. The wool of the same animal differs much on the various parts of the body: that on the back and the sides is the best. The great difference in the wool of different sheep depends, in general, upon their descent, the crossing of breeds, climate, food, and manner of living, and among the individual animals of the same breed, upon age, sex, and outward circumstances. The wool is, therefore, divided into coarse wool, which

is long, either straight or irregularly curled, and fine wool, which is regularly curled. There are again many subdivisions. In Spain, the sheep are sorted before the washing, then shorn, and at last the wool is washed. It comes into the market divided into four sorts: *refina*, *prima*, *segonda* and *tercera*. The Saxon wool is also divided into four sorts: *electoral*, *prima*, *secunda* and *tertia*. To sort the wool requires much practice, in order to discern minute differences that are quite inappreciable by common observers. Frequently eight or ten different kinds are found in a single fleece; and if the best wool of one fleece be not equal to the finest sort, it is put with a second, third or fourth, or a still lower class, of an equal degree of fineness with it. The best English native short fleeces, such as the fine Norfolk and South Down, are generally divided by the wool-sorter into the following kinds, all varying in fineness, viz. 1. prime; 2. choice; 3. super; 4. head; 5. downrights; 6. seconds; 7. fine abb; 8. coarse abb; 9. livery; 10. short, coarse, or breech wool. The relative value of each varies according to the greater demand for coarse, fine or middle cloths. Fine Merino wool, upon healthy and full-grown animals, grows within a year from one to two inches, generally from one and a half to two inches. As the fineness of the wool is a very important quality (though softness is equally so), "wool-measures" have been invented. One of these, that of A. C. F. Köhler and K. Hoffmann, two German gentlemen, measures a hundred of the fibres of the wood at once: they are put into a cavity in the middle of the instrument, and pressed by a peculiar apparatus, with a weight of about three Leipsic pounds, till the maximum reaction of their elasticity is reached, and the result is indicated, sixty times magnified, on a semicircle divided into degrees. Mr Köhler has written a pamphlet on the use of this instrument, and Mr Hoffmann makes them for sale in Leipsic. The price of one is forty Saxon dollars. The softness of the fibre, as already observed, is of great importance. It does not depend on fineness, and consists of a peculiar feel, approaching to that of silk or down. The difference in the value of two pieces of cloth, made of two kinds of wool equally fine, but one distinguished for its softness, and the other for the opposite quality, is such, that, with the same process and expense of manufacture, the one will be worth from twenty to twenty-five per cent. more than the other. Mr Bakewell maintains that the degree of softness depends principally on the nature of the soil on which sheep are fed; that sheep pastured on chalk districts, or light, calcareous soil, usually produce hard wool; while the wool of those that are pastured on rich, loamy, argillaceous soils, is always distinguished by its softness. The Saxon wool is generally softer than the Spanish. Hard wools are all defective in felting properties. The felting property of wool is known to every one. The process of hat-making, for example, depends entirely upon it. The wool of which hats are made is neither spun nor woven; but locks of it, being thoroughly intermixed and compressed in warm water, cohere, and form a solid, tenacious substance. Whole tribes use felted wool for cloth. Cloth and woollen goods are made with us from wool possessing this property: the wool is carded, spun, woven, and then, being put into the fulling-mill, the process of felting takes place. The strokes of the mill make the fibres cohere: the piece subjected to the operation contracts in length and breadth, and its texture becomes more compact and uniform. This process is essential to the beauty and strength of woollen cloth. But the long wool, of which stuffs and worsted goods are made, is deprived of its felting properties. This is done by passing the wool through heated iron combs, which take away the *laminæ*, or feathery part of the wool, and approximate it to the nature of silk or cotton. Long or combing wool may vary in length from three to eight inches. The shorter combing wools are principally used for hose, and are spun softer than the long combing wools; the former being made into what is called *hard*, and the latter into *soft* worsted yarn. Short wool is used in the cloth manufacture, and is, therefore, frequently called clothing wool. It may vary in length from one to three or four inches: if it be longer, it requires to be cut or broken to prepare it for the manufacture. In clothing wool, the colour of the fleece should always approach as much as possible to the purest white; because such wool is not only necessary for cloths dressed white, but for all cloths that are to be dyed bright colours, for which a clear white ground is required to give a due degree of richness and lustre. Some of the English fine woolled sheep, as the Norfolk and South Down, have black or gray faces and legs. In all such sheep there is a tendency to produce gray wool on some part of the body, or to produce some gray fibres intermixed with the fleece, which renders the wool unfit for many kinds of white goods; for, though the black hairs may be too few and minute to be detected by the wool-sorter, yet, when the cloth is stoved, they become visible, forming reddish spots, by which its colour is much injured. The Herefordshire sheep, which have white faces, are entirely free from this defect, and yield a fleece without any admixture of gray hairs. The cleanliness of the wool is an important consideration. The Spanish wool, for example, is always scoured after it is shorn, as stated above; whereas the wool of many other countries is only imperfectly washed previously to its being shorn. In consequence of which, it is said that while a pack of English clothing wool, of 240 pounds weight, will waste about seventy pounds in the manufacture, the same quantity of Spanish wool will not waste more than forty-eight pounds. Cleanness, therefore, is an object of much importance to the buyer. Whiteness of fleece is of less importance in the long combing than in clothing wool, provided it be free from gray hairs. Sometimes, however, the fleece has a dingy brown colour, called a *winter stain*, which is a sure indication that the wool is not in a thoroughly sound state. Such fleeces are carefully thrown out by the wool-sorter, being suitable only for goods that are to be dyed black. The fineness of heavy combing wool is not of so much consequence as its other qualities. We have already spoken, in the article *Sheep*, of the deterioration of British wool from the raising of fine mutton. The better the meat, the coarser the wool. However, whilst the average weight of a fleece of the German Merino breed is about two and a half to three pounds, that of a fat Leicester sheep is from eight to nine pounds; and thus the large fleece somewhat makes up the loss of fineness by increase of weight, so that it is probable, that, notwithstanding the decline in the price of wool, taking into account the greater weight of the carcass and the greater weight of the fleece, sheep produce more at present to the British farmer than at any former period. According to a

table, formed by order of the lords' committee of 1828, and published in their report on the wool duty question, the quantity produced, on an average of years, in England, is 111,160,560 pounds: the importation was, in 1828, 29,122,447 pounds, making a total of 140,283,007 pounds for every year's consumption and exports in the shape of manufactured goods. In Germany, the fine wool produced has surprisingly increased since 1815, or since peace took place. We have spoken of the history of this branch of industry, in Germany, in the article *Sheep*. We only add, that, from papers laid before the British parliament, it appears, that for the year ending January 5, 1829, there were imported from Germany 23,110,822 pounds of wool, which, calculated at an average of 1*s.* 6*d.* per pound, makes a return, from England alone, of £1,733,311, 13*s.* Admitting only one half more for the wool exported to France, the Netherlands, Russia, Poland and Switzerland, and assuming that the internal manufactures of Germany consume one half of the wool produced, which is short of the truth, the result will give £5,199,934, 19*s.* of annual value, created by the growth of wool now raised, instead of the worthless hair produced upon the old indigenous sheep of Germany, which was scarcely in sufficient quantity to supply the peasantry with worsted petticoats and stockings. It is not only in Saxony that fine wool is raised: in Silesia, Moravia, Austria Proper, Bohemia, also in Hungary, &c., nohle flocks have sprung up. Until the elector of Saxony received a present of a small Merino flock from the king of Spain, about thirty years since, the only fine wool known was the Spanish wool, which at that time was supplied to England, France and the Netherlands for their fine cloth manufactures. Unfortunately for the Spanish flock-masters, the captains of Napoleon's armies which invaded Spain, drove several of the finest flocks into France; and many others were killed or dispersed by the various parties which ravaged that country during the contest for its dominion. So completely were they destroyed, and the original system of keeping the sheep lost, in the convulsions of that period, that the wool has degenerated into a quality not worth more than one third of that of the same stock of sheep in Germany. The following table, taken from the English custom-house returns of imports, will show the effects of this transfer of the Merino breed from Spain to Germany:—

| Imported from | in 1800. | 1814. | 1827. | |
|---|---|---|---|---|
| Germany, | 421,350 | 3,595,146 | 22,007,198 | pounds. |
| Spain and Portugal, | 7,794,758 | 9,234,991 | 4,349,643 | |

In 1800, the ports of both countries were open to English commerce, as well as at the two latter periods; so that, in fact, the progressive increase of importations from Germany, and the decrease from Spain, are the best possible tests of the revolution which has taken place in the relative position of these two countries as respects the wool cultivation. A table below shows the different prices. But not Germany only has become a rival of Spain: two distant colonies of England may soon vie with both—New South Wales and Van Diemen's Land. In the year 1795, a small flock of sheep, not exceeding one dozen, was carried to the upper colony of New South Wales, from the cape of Good Hope. From these sprung the vast flocks which now exist there. The quantity of wool yielded for a long time was too small to form a shipment to England; hut, in 1804, some Merinos, purchased from the king's flock at Windsor, were sent out; and such a prodigious increase of sheep took place, that whilst, in 1806, only 245 pounds of wool were imported into England from New South Wales, in 1837, 4,606,915 pounds were imported from that colony, and 2,453,610 pounds from Van Diemen's Land, making in all 7,060,525. Saxony sheep have also been imported into the colony, direct from Germany, and such is the influence of climate or herbage, or both, that they thrive amazingly, and every year seems to add to the fineness of the wool. It is thought, that, in a short time, Britain will derive the whole of her supplies of foreign wool from this part of the globe. Sheep-farming now constitutes the chief employment and dependence of the New South Wales colonist. Some possess 15,000 or 20,000 sheep. These are divided into separate flocks, more or less numerous, according to the nature of the country and the pasture. The work of the shepherd is very severe, especially in the more sterile parts of the colony.

The value of the various kinds of wools of the different countries in the London market, is,—

| Germany. | | *s.* | *d.* | | *s.* | *d.* |
|---|---|---|---|---|---|---|
| Saxony and Silesia, | 1st and 2d. Electoral, per lb. | 4 | 0 | to | 6 | 6 |
| | Prima, .. | 2 | 6 | .. | 3 | 6 |
| | Secunda, .. | 1 | 9 | .. | 2 | 3 |
| | Tertia, .. | 1 | 6 | .. | 1 | 9 |
| Austria, Bohemia and Hungary, | Elector, .. | 4 | 0 | .. | 5 | 6 |
| | Prima, .. | 2 | 4 | .. | 3 | 9 |
| | Secunda, .. | 1 | 9 | .. | 2 | 3 |
| | Tertia, .. | 1 | 3 | .. | 1 | 9 |
| Lambs', .. | | 1 | 6 | .. | 3 | 9 |
| Pieces, .. | | 1 | 6 | .. | 2 | 6 |
| Fribs, .. | | 1 | 3 | .. | 1 | 9 |
| Fleeces, .. | | 1 | 6 | .. | 2 | 6 |
| Spanish, Leonesa, | | 2 | 0 | .. | 2 | 9 |
| Segovia, .. | | 2 | 0 | .. | 2 | 4 |
| Soriana, .. | | 1 | 10 | .. | 2 | 0 |
| Caceres, .. | | 2 | 0 | .. | 2 | 3 |
| Seville, .. | | 1 | 8 | .. | 1 | 10 |
| Portugal, .. | | 1 | 2 | .. | 1 | 4 |
| Lambs', .. | | 1 | 4 | .. | 2 | 0 |
| Australian, best, .. | | 2 | 0 | .. | 5 | 0 |
| 2d and inferior, .. | | 1 | 2 | .. | 2 | 0 |
| Lambs', .. | | 1 | 2 | .. | 2 | 1 |
| Van Diemen's Land, Greasy and inferior, .. | | 0 | 9 | .. | 1 | 0 |
| Clean and better, .. | | 1 | 3 | .. | 1 | 9 |
| Eng. Merino, washed, .. | | 1 | 9 | .. | 2 | 6 |
| In the grease, .. | | none. | | | | |
| South Down, .. | | 1 | 0 | .. | 1 | 4 |
| Goats' wool, Turkey, .. | | 1 | 4 | .. | 1 | 8 |

According to a work by M. Ternaux, Paris, 1827, on sheep-breeding and the wool trade in France, the Spanish wool was, forty years ago, the dearest. Since 1794, but particularly since 1804, its price has sunk considerahly, whilst that of Saxon wool has risen. In 1804, a kilogramme of the best Spanish wool cost twenty-four francs; in 1827, only nine francs; the best French wool at the first period, eighteen francs, at present, twenty francs; and Saxon electoral wool, at the first period, sixteen francs, at present, thirty-four francs.

*An account of the quantity of Sheep and Lambs' Wool imported into and exported from the United Kingdom in the years* 1835 *and* 1836; *also an account of the British Woollen Manufactures exported in each of the same years:—*

| | 1835. | 1836. |
|---|---|---|
| Sheep and Lambs' Wool Imported | 42,209,949 lbs. | 64,272,390 lbs. |
| Foreign Sheep and Lambs' Wool re-exported . . | 4,101,700 .. | 613,707 .. |
| Foreign Sheep and Lambs' Wool remaining under Bond Dec. 31st | 2,846,014 .. | 6,111,252 .. |
| British Sheep and Lambs' Wool exported . . | 4,642,604 .. | 3,942,407 .. |
| Woollen and Worsted Yarn, &c. exported . . | 2 357,336 .. | 2,546,177 .. |
| Value of British Woollen Manufactures exported . | £6,840,511 | £7,639 353 |

As England is the great woollen mart—the following table of exports and imports will afford some idea of the relative production of wool in the various countries of the world.

AN ACCOUNT of the QUANTITY of FOREIGN WOOL IMPORTED into, and of FOREIGN and BRITISH WOOL, WOOLLEN YARN, and British Manufactured WOOLLEN GOODS EXPORTED from, the United Kingdom, distinguishing the Countries whence the same was brought, or whereto it was Exported, in the Year 1832.

| COUNTRIES. | FOREIGN WOOL. | | BRITISH. | | BRITISH MANUFACTURED WOOLLEN GOODS. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Imported. | Exported. | Wool Exported. | Woollen Yarn Exported. | Cloths of all sorts. | Napped Coatings, Duffels, &c. | Kerseymeres. | Baizes of all sorts. | Stuffs, Woollen or Worsted. | Flannels. | Blankets and Blanketing. | Carpets and Carpeting. | Woollens mixed with Cotton. | Hosiery, viz. Stockings Woollen or Worsted. | Sundries, consisting of Hosiery not otherwise described, Rugs, Coverlids, Tapes, and Small Wares. | | | Declared Value of British Woollen Manufactures Exported from the United Kingdom. | | |
| | lbs. | lbs. | lbs. | lbs. | Pieces. | Pieces. | Pieces. | Pieces. | Pieces. | Yards. | Yards. | Yards. | Yards. | Doz. Prs. | £. | s. | d. | £. | s. | d. |
| Russia | 855,680 | 2,596 | 414 | 44,834 | 8,473 | 144 | 2,895 | 4 | 47,028 | 35,754 | 3,140 | 20,089 | 4,067 | 215 | 74 | 0 | 0 | 144,997 | 0 | 0 |
| Sweden | ..... | .... | .... | 449 | 6 | .... | .... | .... | 4,533 | .... | 1,490 | 706 | .... | 90 | 3 | 0 | 0 | 4,966 | 2 | 0 |
| Norway | ..... | .... | .... | .... | 182 | .... | 37 | 22 | 1,743 | 2,416 | 1,600 | .... | 4,845 | 287 | 6 | 253 | 15 | 6 | 7,694 | 18 | 9 |
| Denmark | 302,848 | .... | .... | 205 | 38 | 47 | .... | ... | 536 | 3,016 | 180 | 1,300 | .... | 256 | | 50 | 0 | 0 | 1,380 | 0 | 0 |
| Prussia | 833,988 | .... | .... | 6,771 | 19 | 8,868 | 9 | ... | 97 | 990 | 170 | 160 | 910 | 8 | | ..... | | | 626 | 10 | 0 |
| Germany | 19,832,225 | 27,056 | 32 394 | 1,128,196 | 17,855 | 13,030 | 21,101 | 622 | 725,506 | 354,210 | 2,214 | 52,764 | 326,989 | ,027 | | 4,768 | 0 | 0 | 816,718 | 12 | 0 |
| The United Netherlands | 209,144 | 435,599 | 3,416,963 | 425,751 | 9,862 | 38 | 2,514 | 8,303 | 142,168 | 1,000,356 | 12 736 | 18,516 | 379,871 | 29,120 | 6 | 4,383 | 0 | 0 | 389,910 | 12 | 6 |
| France | 1,973 | 67,772 | 736,482 | 3.361 | 742 | 353 | 103 | 15 | 15,862 | 44,359 | 100 | 5,404 | 28,236 | 758 | | 232 | 0 | 0 | 43,186 | 12 | 0 |
| Portugal, Azores, and Madeira | 193,544 | .... | .... | 2,378 | 10,434 | 33 | 440 | 3,440 | 12,505 | 5.165 | 25,620 | 4,503 | 21,940 | 190 | | 1,641 | 5 | 0 | 96,625 | 6 | 0 |
| Spain and the Canaries | 2,626,624 | .... | .... | 808 | 2,417 | 32 | 255 | 1,605 | 21,870 | 13.430 | 3,060 | 1,967 | 14,901 | 15 | | 467 | 12 | 0 | 62,472 | 14 | 0 |
| Gibraltar, | ..... | .... | .... | 230 | 1,613 | 5 | 159 | 120 | 4,240 | 5,054 | 4,000 | 3,116 | 11,699 | 619 | | 864 | 0 | 0 | 25,681 | 0 | 0 |
| Italy | 78.552 | .... | 5,712 | 17,306 | 7,447 | .... | 764 | 29 | 113,484 | 21,484 | 3,518 | 20,678 | 11.070 | 1,970 | | 935 | 5 | 0 | 194,081 | 11 | 0 |
| Malta | 564 | .... | .... | .... | 824 | 20 | 22 | .... | 1,415 | 2,404 | .... | 70 | 2,460 | 164 | | 13 | 0 | 0 | 8 077 | 10 | 0 |
| Ionian Islands | ..... | .... | .... | .... | 287 | 60 | 24 | 7 | 116 | 2,420 | 60 | 730 | 70 | 140 | | ..... | | | 2,322 | 0 | 0 |
| Turkey and Continental Greece | 32,457 | .... | .... | .... | 1,656 | 9 | 45 | 2 | 7,960 | 5,830 | 840 | 23,120 | 1,640 | 57 | | 70 | 0 | 0 | 27,829 | 3 | 8 |
| Morea and Greek Islands | ..... | .... | .... | .... | 7 | 35 | .... | .... | .... | .... | .... | .... | .... | .... | | ..... | | | 140 | 0 | 0 |
| Isles of Guernsey, Jersey, Alderney, and Man | 13,516 | 2,464 | 6,076 | 9,537 | 2,492 | 50 | .... | 245 | 4,996 | 75,704 | 26,950 | 12,009 | 400 | 630 | 6 | 1,529 | 2 | 0 | 40,954 | 10 | 0 |
| East Indies and China | ..... | .... | .... | 3,656 | 55,081 | 12 | 115 | 47 | 178,895 | 70,100 | 28,700 | 10,544 | 50,090 | 4,206 | 2 | 2,864 | 5 | 10 | 696,073 | 8 | 4 |
| New Holland | 2,377,057 | 20 | .... | .... | 2,002 | 317 | 196 | 33 | 3,613 | 35,382 | 79,909 | 12,629 | 3,348 | 3,569 | | 690 | 9 | 6 | 35,657 | 5 | 0 |
| Cape of Good Hope | 83,257 | ... | .... | 20 | 4,010 | ... | 420 | 336 | 7,555 | 26,590 | 14,070 | 3,312 | 37,102 | 962 | | 681 | 0 | 0 | 41,766 | 10 | 0 |
| Other parts of Africa | ..... | .... | .... | 848 | 421 | 241 | 84 | 66 | 3,381 | 6,040 | 2,390 | 300 | 824 | 372 | 6 | 1,831 | 0 | 0 | 12,890 | 19 | 0 |
| British North American Colonies | ..... | 3,235 | 784 | 10,808 | 47,227 | 69 | 616 | 907 | 51,706 | 444,774 | 282.250 | 109,162 | 18,002 | 18,582 | 1 | 11,927 | 15 | 10 | 362,436 | 9 | 5 |
| British West Indies | 877 | ... | .... | 18 | 8,261 | .... | 195 | 5,047 | 13,747 | 58,500 | 160,791 | 3,584 | 4,155 | 2,007 | | 4,578 | 3 | 6 | 92,902 | 15 | 6 |
| United States of America | 628,038 | 16,262 | 1,000 | 547,389 | 151,530 | 90 | 776 | 266 | 336,897 | 54,939 | 875,396 | 345,471 | 258,919 | 71,478 | 9 | 10,842 | 17 | 6 | 1,420,642 | 18 | 8 |
| Foreign West Indies | ..... | .... | .... | .... | 5,711 | .... | 97 | 144 | 18,312 | 17,069 | 77,033 | 2,380 | 6,860 | 902 | 0 | 802 | 0 | 0 | 66,519 | 5 | 0 |
| Brazil | 15,456 | .... | .... | .... | 19,814 | .... | 1,176 | 11,977 | 48,026 | 11,706 | 26,994 | 864 | 45,793 | 405 | 0 | 1,779 | 0 | 0 | 210,163 | 8 | 0 |
| Mexico, and the States of South America | 56,689 | .... | .... | 1,899 | 37,952 | .... | 8,941 | 1,637 | 34,523 | 7,057 | 48,629 | 36,664 | 99,881 | 8,778 | 0 | 4,162 | 10 | 0 | 437,762 | 0 | 0 |
| Total | 28,142,489 | 555,014 | 4,199,825 | 2,204,464 | 396,661 | 23,453 | 40,984 | 34,874 | 1,800,714 | 2,304,750 | 1,681,840 | 690,042 | 1,334,072 | 152,810 | | 55,443 | 1 | 8 | 5,244,478 | 10 | 10 |
| Total in the Year 1831 | 31,652,029 | 1,025,962 | 3,494,275 | 1,592,455 | 436,143 | 13,892 | 29,650 | 30,259 | 1,487,404 | 1,572,558 | 2,546,328 | 678,656 | 1,000,004 | 143,774 | | 64,648 | 0 | 0 | 5,232,013 | 0 | 0 |

For more information, we refer the reader to the various English publications on this subject, which include several able treatises on the question of the wool trade. Various German and French treatises also should be mentioned; as Wagner's Contributions to the Knowledge and Treatment of Wool and Sheep (2d ed., Berlin, 1821); F. B. Weber, On the Raising of fine and noble Wool (Breslau, 1822); J. M. baron von Ehrenfels, On the Electoral Sheep and Electoral Wool (Prague, 1822); Christ. Charles André, Latest Views on the Raising of Wool and Sheep, taken from three French Writers (Prague, 1825, 4to.); Sheep and Wool, by professor Ribbe (Prague, 1825); Petri's Whole Subject of Sheep-Breeding, &c. (Vienna, 1825, 2 vols., 2d ed.); The latest and most interesting Notices respecting a Knowledge of the finer Kinds of Sheep and Wool, by the same (Vienna, 1829); On the Wool Trade of Germany in 1829, by Elsner (1830): all of these works are in German: further, *Nouveau Traité sur Laine*, by viscount Perrault de Jotemps (Paris, 1824); *Histoire de l'Introduction des Moutons à Laine fine d'Espagne dans les divers Etats de l'Europe*, &c., by M. C. P. Lasteyrie (Paris, 1802); *Notice sur l'Amélioration des Troupeaux de Moutons en France*, by G. L. Ternaux (Paris, 1827). The reports on the trade in the newly-erected wool markets at Berlin, Breslau, Stettin, Dresden, Leipsic, Nuremberg, &c., published in the *Allgemeine Zeitung*, are also of much interest. See the next article.

WOOLLENS. The fibres of wool, being contorted and elastic, are drawn out and spun by machinery in some respects similar to that used for cotton, but differing in various particulars. In the preceding article, it is mentioned that there are two sorts of wool which afford the basis of different fabrics, the *long* wool or worsted, in which the fibres are rendered parallel by the process of combing, the material of which camlets, bombazines, &c., are made, and the *short* wool, prepared by carding, like cotton, which is used, in different degrees of fineness, for broadcloths, flannels, and a multitude of other fabrics. This wool, when carded, is formed into small cylindrical rolls, which are joined together, and stretched and spun, by a *slubbing* or roving machine, and a jenny or mule, in both of which the spindles are mounted on a carriage, which passes backwards and forwards, so as to stretch the material, at the same time that it is twisted. On account of the roughness of the fibres, it is necessary to cover them with oil or grease, to enable them to move freely upon each other during the spinning and weaving. After the cloth is woven, the oily matter is removed by scouring, in order to restore the roughness to the fibres preparatory to the subsequent operation of fulling.—In articles which are made of long wool, the texture is complete when the stuff issues from the loom. The pieces are subsequently dyed, and a gloss is communicated to them by pressing them between heated metallic surfaces. But in cloths made of short wool, the web, when taken from the loom, is loose and open, and requires to be submitted to another operation, called *fulling* (q. v.), by which the fibres are made to felt, and combine more closely. (See *Felting*.) By this process, the cloth is reduced in its dimensions, and the beauty and stability of the texture are greatly improved. The tendency to become thickened by fulling, is peculiar to wool and hair, and does not exist in the fibres of cotton or flax. It depends on a certain roughness of these animal fibres, which permits motion in one direction, while it retards it in another. It thus promotes entanglements of the fibres which serve to shorten and thicken the woven fabric. Before the cloth is sent to the fulling-mill, it is necessary to cleanse it from all the unctuous matter which was applied to prepare the fibres for spinning. The nap or downy surface of broad cloths, is raised by a process, which, while it improves the beauty, tends somewhat to diminish the strength of the texture. It is produced by carding the cloth with a species of burrs, the fruit of the common teasel, (*dipsacus fullonum*), which is cultivated for the purpose. This operation extricates a part of the fibres, and lays them in a parallel direction. The nap, composed of these fibres, is then cut off to an even surface, by the process of *shearing*. This is performed in various ways: but, in one of the most common methods, a large spiral blade revolves rapidly in contact with another blade, while the cloth is stretched over a bed, or support, just near enough for the projecting filaments to be cut off at a uniform length, while the main texture remains uninjured.

*Manufacture of Woollens.* In England, the arts of spinning wool and manufacturing the yarn into cloth, were undoubtedly introduced by the Romans. The manufacture of broad cloths was established soon after the year 1200, if not previously. But the woollen manufacture of Flanders being, at this period, and long after, in a comparatively advanced state, English wool was exported in large quantities to Bruges and other Flemish cities, whence fine cloths and other products were brought back in exchange. Edward III. invited over Flemish weavers, fullers, dyers, and others. Shortly after the first emigration of Flemings, or in 1337, an act was passed, prohibiting the wearing of any cloths made beyond sea, and prohibiting the export of English wool. From that period, the manufacture has always been regarded as of primary importance. During the reign of Charles II., there were many, though unfounded, complaints of the decay of the manufacture; and by way of encouraging it, an act was passed, ordering that all persons should be buried in woollen shrouds. This act preserved its place in the statute book for more than 130 years. Towards the end of the seventeenth century, Mr Gregory King and Doctor Davenant (Davenant's *Works*, Whitworth's ed., vol. ii., p. 233), estimated the value of the wool shorn in England at £2,000,000 a year; and they supposed that the value of the wool (including that imported from abroad) was quadrupled in the manufacture, making the entire value of the woollen articles annually produced in England and Wales, £8,000,000, of which about £2,000,000 were exported. In 1700 and 1701, the official value of the woollens exported amounted to about £3,000,000 a year. Owing to the vast increase in the wealth and population of the country, the manufacture must have been very greatly extended during the last century; but the increase in the amount of the exports has been comparatively inconsiderable. At an average of the six years ending with 1799, the annual official value of the exports was £3,544,160 a year, being an increase of only about £540,000 on the amount exported in 1700. The extraordinary increase of the cotton manufacture, soon after 1780, and the extent to which cotton articles then began to be substituted for those of wool, though it did not occasion any

absolute decline of the manufacture, no doubt contributed powerfully to check its progress. In 1802, the official value of the exports rose to £7,321,012, being the largest amount they have ever reached. In 1812, they sunk to £4,376,479. During the three years ending with 1830, the official and the declared or real values of the woollen manufactures exported from the United Kingdom were as follows:—

| | 1828. | 1829. | 1830. |
|---|---|---|---|
| Official value of woollen manufactures exported, | £5,728,969 | £5,372,490 | £5,553,709 |
| Declared or real value of ditto, . . . . | 5,125,784 | 4,661,259 | 4,850,884 |

In 1836, the declared value (as may be seen from a previous table) was £7,639,363.

*Value of the Manufacture. Number of Persons employed.*—The most discordant estimates have been given as to both these points. For the most part, however, they have been grossly exaggerated. Mr Stevenson, who is one of the writers on British statistics on whose statements the most reliance is to be placed, after a careful examination into the subject, has given the following estimate of the value of the woollen manufactured goods annually produced in England and Wales, and of the interest, &c., of the capital, and the number of persons employed in the manufacture:—

| | | |
|---|---|---|
| Total value of manufactured articles, . . . . | | £18,000,000 |
| Value of raw material, . | £6,000,000 | |
| Interest on capital, sum to replace its wear and tear, and manufacturers' profits, | 2,400,000 | |
| Wages of workmen, . | 9,600,000 | |
| | | £18,000,000 |

Number of people employed, 480,000, or perhaps 500 000.

We believe, however, taking Scotland into account, and looking at the probable annual expenditure of each individual on woollens, that the total value of the manufactured articles annually produced in Great Britain may, at present, be moderately calculated at £20,000,000, or £22,000,000. But, on the other hand, Mr Stevenson has materially underrated the proportion of the entire value of the manufacture falling to the share of the capitalists, and required to indemnify them for their various outgoings, and to yield them ordinary profits. In estimating the wages of the persons employed at about eight shillings a week, or twenty pounds a year, he is below the mark; and ten shillings a week, or twenty-six pounds a year, would be a more correct average. The number of persons employed in the manufacture does not probably much exceed, if it does not fall short of 400,000.

The low condition of the woollen manufactures in the United States of America at the commencement of the last war with Great Britain, was shown by the request of the secretary of war to congress, that the existing laws might be so far repealed as to allow the importation of six thousand blankets for the Indian department. The law, however, was not repealed, and the want of woollens, during that contest, caused the establishment of some woollen factories, and an extension of the business of those which had previously existed; but they could supply only a small part of the demand, and an illicit trade was, in fact, kept up with the enemy. The growth of sheep, and the manufacture of their wool, was of considerable value soon after the close of the war; and many millions of dollars were invested in these branches of business, fine-woolled sheep having been purchased at most extravagant prices, because fine wool had been sold for from three to four dollars per pound. But the high duties imposed during the war were reduced after its termination, and vast quantities of British and other woollen goods were introduced and sacrificed to break up the American establishments. The manufacturers were ruined, and the sheep were, to a great extent, slaughtered. Soon after the British cloths greatly advanced in price, and the American establishments began partially to revive, and maintained themselves, though the business was not profitable till the passage of the tariff law of 1824, by which the existing duty of fifteen per cent. on cloths and cassimeres, was immediately raised to thirty per cent., and was to be made thirty-three and a half per cent. after June 30, 1825. An ad valorem duty of twenty per cent., instead of the existing duty of fifteen per. cent., was also imposed on imported wool, to advance to thirty per cent. after June 1, 1826, on all wool costing more than ten cents per pound. Contemporaneously with the changes in the American tariff, a revision of the English tariff was made, avowedly with the object of enabling the British manufacturers to command the foreign, and especially the American market of low-priced cloths. The duty imposed in 1824, proved inadequate for the protection of the American woollen manufactures; and their languishing state indicated the ruin of those engaged in them, unless further legislative encouragement was afforded. A bill to this effect received the sanction of the house, but was laid on the table in the senate by the casting vote of the vice-president. Steps were immediately taken to bring the subject again before congress; and a convention of delegates from the states interested was held at Harrisburg, in August, 1827. This convention prepared a memorial, recommending an ad valorem duty of forty per cent. on woollen manufactures, with an annual increase of five per cent. until it amounted to fifty per cent. In the debates on this subject in the next session of congress, Mr Mallary estimated the consumption of woollens in the United States at 72,000,000 dollars per annum; of which 10,000,000 dollars were imported, 22,000,000 dollars the productions of American manufactures, and 40,000,000 dollars the result of household industry. The tariff adopted during that session much increased the existing duties both on manufactured and unmanufactured wool. Some changes in these particulars were made by the tariff of 1832. In the report on wool and woollens, made to the "friends of domestic industry," assembled in New York in the autumn of 1831, the gross annual product of wool and its manufactures in the United States was estimated at 40,000,000 dollars. The fixed and floating capital vested in the woollen manufactories in the United States, such as lands, water-rights, buildings, machinery, stock on hand, and cash employed, was estimated at an equal amount. The proportion between the amount of wool used in the factories and that worked up by household industry, was estimated to be as three to two.

WOOLLETT, William, an eminent engraver, was born at Maidstone, in Kent, August 27, 1735. He was the son of a thread-maker, and early attracted the notice of his school-master by his display of talent for drawing. Having attempted some engravings in copper, which were seen by Mr Tinney, an engraver, the latter took him as an apprentice. When out of his time his rise in his

profession was very rapid; and he brought the art of landscape engraving to great perfection. He also engraved historical subjects and portraits with the greatest success. All his best works bring high prices, but particularly his Niobe, Phaëton, Ceyx and Alcyone, Celadon and Amelia, and the Fishery, all from Wilson; and his Death of General Wolfe, and Battle of the Boyne, from West. He died, May 23, 1785, at the age of fifty.

WOOLSACK: the seat of the lord chancellor of England, in his capacity of speaker of the house of lords. It is what its name implies, a large square bag of wool, without back or arms, covered with red cloth. In front of the lord chancellor lie the great seal and the mace. The judges, king's counsel at law, and masters in chancery, who sit in the house of lords, but who do not vote, are likewise seated on woolsacks. The practice was derived from the well-known fact of wool having been, from an early period, the great staple of England.

WOOLSTON, Thomas, an English divine, the son of a tradesman of Northampton, was born in 1669. He was admitted of Sidney college, Cambridge, in 1685, of which he was subsequently elected fellow, and took orders. Having become an assiduous reader of the works of Origen, he imbibed a fondness for allegorical interpretations of Scripture; the result of which tendency appeared in 1705, in a work entitled the Old Apology for the Truth of the Christian Religion against the Jews and Gentiles revived. The object of this tract was to prove that all the actions of Moses were typical of Christ and his church, and to show that some of the fathers understood them as such, and not as realities. In 1720, he left his college, and went to London, where he published a Latin dissertation concerning the supposed epistle of Pontius Pilate to Tiberius. In the same year, he published two Latin dissertations in defence of Origen's allegorical mode of interpreting the Scriptures. His next work was an Inquiry whether the Quakers do not, the nearest of any other Sect, in Religion, resemble the Primitive Christians in Principles and Practice. His chief object in this publication was, apparently, to attack the clergy, which, with his refusal to reside at college, according to the statutes, caused him the loss of his fellowship, in 1721. In 1726, he published a Defence of the Miracle of the Thundering Legion. Engaging in the controversy between Anthony Collins and his opponents, he published several pamphlets, in which he not only argued for mystical interpretations of the miracles of Christ, but asserted that they were never actually wrought. He was now regarded as an enemy to Christianity, and a prosecution was instituted against him by the attorney-general, which Whiston, and other friends to toleration, had the interest to get stayed. He was not, however, silenced, and, in 1727, and the three following years, published his Six Discourses on the Miracles, and two Defences of the Discourses, in which he not only maintained his former opinions, but expressed himself with a sarcasm and ridicule which gave serious offence: and the law again interfered. He was tried at Guildhall for blasphemy, when his counsel pleaded that it was so far from his purpose to bring the Christian religion into contempt, that he intended to place it on a firmer footing. He was, however, found guilty, and sentenced to a year's imprisonment, and a fine of a £100. He purchased the liberty of the rules of the king's bench prison, after the expiration of his imprisonment, not being able to pay his fine. He had obtained some money by his publications, which was swallowed up by legal expenses, and he chiefly relied for support on a small annual allowance from his brother, and the contributions of some respectable persons, who regarded him as a man of learning, misled by mysticism and enthusiasm. Solicitations were made for his release by doctor Samuel Clarke; but he declined giving any security not to offend again in a similar way. He was, however, soon after released by death, being carried off by an epidemic disorder in January, 1732—1733, in his sixty-second year.

WOOLWICH; a market town of England, in Kent, on the Thames, eight miles below London. It was formerly only a small village, and owes its consequence to the establishment of a royal dock in the reign of Henry VIII. The dock-yard has been progressively increasing since its establishment, and, in its present state, includes about five furlongs in length by one in breadth; within which space there are two dry-docks, five slips, three mast-ponds, a mould-loft, storehouses of various descriptions, mast-houses, sheds for timber, dwellings for the various officers, a very complete smithery for the manufacture of anchors, &c. This dock-yard is under the direction of a commissioner, who has also the control of that of Deptford; and, during the last war, the number of artificers and labourers employed here amounted to nearly 2000; since the peace, they are reduced to about two-thirds of that number. The arsenal at Woolwich, called the *Warren*, is the grand national depot for every species of ordnance, both military and naval, and contains an immense quantity of guns, gun-carriages, military wagons, and every thing pertaining to the department of the ordnance. The arsenal includes nearly sixty acres, and contains various piles of brick buildings for different uses. The number of artificers, labourers, and boys employed is about 3000, exclusive of the convicts, who amount to about 900, generally employed in the most laborious offices.

The origin of the royal arsenal at Woolwich is curious. It is thus given in the Penny Magazine, for 1833. "The government foundry for casting brass ordnance was formerly situated in Moorfields. The process of casting the cannon was then an object of curiosity to the inhabitants of the metropolis, many of whom, of all classes, frequently attended during the operation of pouring the melted metal into the moulds. The injured cannon which had been taken from the French in the successful campaigns of the duke of Marlborough, amounting to a considerable number, had been placed before the foundry and in the adjacent artillery ground, and it was determined in 1716, to recast these cannon. On the day appointed for performing this work, a more than usual number of persons were assembled to view the process. Many of the nobility and several general officers were present, for whose accommodation temporary galleries had been erected near the furnaces. Among the company then drawn together was Andrew Schalch, an intelligent young man, a native of Schaffhausen, in Switzerland, who was travelling for improvement: he was at the foundry at an early hour, and having been permitted minutely to inspect the works, detected some humidity in the moulds, and immediately perceived the danger likely to arise from the pouring into them of hot metal in such a state. Schalch com-

municated his fears to Colonel Armstrong, the surveyor-general of the ordnance, explained his reasons for believing that an explosion would take place, and strongly urged him and the rest of the company to withdraw from the foundry before the casting of the metal. The colonel having closely questioned Schalch on the subject, found him perfectly conversant with all the principles of the founder's art, and being convinced of the good sense which dictated his advice, quitted the foundry, together with all those persons who could be induced to believe that there were any grounds for apprehension. The furnaces being opened, the fluid metal rushed into the moulds, the moisture in which was instantly converted into steam, and its expansive force acting upon the metal drove it out in all directions with extreme violence; part of the roof was blown off, the galleries gave way, and a scene of much mischief and distress ensued. Many of the spectators had their limbs broken, most of the workmen were burnt in a dreadful manner, and several lives were lost. A few days afterwards an advertisement appeared in the newspapers, notifying that if the young foreigner who foretold this explosion would call at the ordnance office, it might prove advantageous to both parties. Schalch being informed, through a friend, of this intimation, lost no time in obeying the summons. Colonel Armstrong had then much further conversation with him on the subject; and became by this means so well assured of his superior ability, that it was finally agreed to intrust Schalch with putting into execution the intention of government to seek an eligible situation out of the metropolis, and within twelve miles thereof, to which the royal foundry should be removed. Schalch, after examining different places, at length fixed upon the rabbit warren, at Woolwich, as suitable to his purpose, and the erection of the works was left to his superintendence. The first specimens of artillery cast by Schalch were so much approved that he was appointed master founder to the board of ordnance, and this office he continued to hold during sixty years, assisted in the latter part of that term by his nephew Lewis Gaschlin. Twenty-five years ago, this nephew, then more than eighty years old, was still employed in the arsenal as principal modeller for the military repository. Schalch died in 1776, at the advanced age of ninety, and is buried in Woolwich church-yard. Some of the largest mortars now remaining in the arsenal were cast under his direction and bear his name."

At Woolwich is a royal military academy, instituted in 1719, but not finally arranged till 1741. It is under the direction of the master-general and board of ordnance for the time being: a lieutenant-governor, an inspector, a professor of mathematics, and four masters; a professor of chemistry; a professor of fortification, and two masters; one French master, two drawing masters, a fencing master, a dancing master, &c. The number of pupils, styled *cadets*, since the peace, has been reduced to 100. They are of the most respectable families; when admitted, must be at least four feet and nine inches high, and not exceed sixteen, nor be under fourteen, years of age. As soon as they are admitted on the establishment, they begin to receive pay, at the rate of £45 12s. per annum. The building is of a castellated form, and was built at the expense of about £150,000. Woolwich contains, also, barracks, a pagoda, used as a repository for models, several hospitals, and other charitable establishments. Population in 1841, 25,785.

WOOTZ. See *Steel*.

WORCESTER; the chief town of Worcestershire, and one of the most ancient cities in England, is agreeably situated in a beautiful vale on the eastern banks of the Severn, 103 miles north-west by west from London. Being an ancient fortified place, this city had a strong wall, of which some remains may yet be seen. The cathedral is a noble specimen of Gothic simplicity. It was first erected by Ethelred, king of Mercia, in 680, but was burned down and rebuilt in the beginning of the thirteenth century. It suffered considerable damage during the civil war, in the reign of Charles I. Its form is that of a double cross. It is in length, 410 feet; in breadth, 78; and in height, 68; and the tower, which rises, from the centre of the cross aisle, to the altitude of 200 feet, is ornamented at the corners by lofty pinnacles and battlements. The cathedral contains many handsome monuments, and is adorned with a variety of sculptures. This city suffered much during the wars between the houses of York and Lancaster; but the most remarkable event here was the famous battle between the English army, under Cromwell, and the Scotch, in the cause of Charles II., in 1651. (See *Cromwell*.) Of the parish churches, there are nine within the walls and two without. Here are various public buildings and charitable institutions, and meeting-houses for various sects. Its hop market is the most considerable in the kingdom. There is a bridge over the Severn, consisting of five arches. The trade of Worcester is considerable. The porcelain and glove manufactures are carried on to a great extent. It sends two members to parliament. Population in 1841, 25,401.

WORCESTER, John Tiptoft, earl of, a patron of learning, and one of the few literary ornaments of England in the fifteenth century, was born at Everton, or Evaston, in Cambridgeshire, and educated at Baliol college, Oxford. He was the son of lord Tibetot, or Tiptoft and Powys, and was created a viscount and earl of Worcester by Henry VI., who also appointed him lord-deputy of Ireland. By Edward IV. he was made knight of the garter, and constituted justice of North Wales for life. Dugdale says he was soon after made constable of the Tower; while others assert that he was twice lord high constable, and twice lord high treasurer. He was also a second time deputy or lieutenant of Ireland, under the duke of Clarence, in which capacity he attainted the earls of Kildare and Desmond for supporting the insurrection against government, and sentenced the latter to be beheaded. On the temporary reverse of fortune experienced by Edward IV. and the house of York, in consequence of the junction between the Earl of Warwick and the duke of Clarence, the earl of Worcester, the severity of whose judicial proceedings as high constable had rendered him extremely obnoxious to the Lancastrians, became one of the first objects of their vengeance. He endeavoured to find security for his person by concealment, but was discovered in a tree in the forest of Weybridge, near Huntingdon, and thence conveyed to London, where he was hastily tried on the accusation of cruelty in his Irish administration, particularly towards two infant sons of the earl of Desmond, and condemned to lose his head on Tower hill, on the eighteenth of October, 1470, which sentence was executed accordingly. He was married three times,

but left only one son and heir, by his third wife. The earl of Worcester appears to have been a person of considerable learning and of great accomplishments for the age in which he lived. In his return from a pilgrimage to Jerusalem, he had passed some time at Venice, Padua, and Rome. He was led to Rome by his desire to see the Vatican library, and he there made an elegant oration to pope Pius II. He was a great collector of books, and gave manuscripts of 500 marks value to the university of Oxford. The literary works of this nobleman, as far as we are acquainted with them, are an English translation of Cicero *De Amicitia*, and of Two Declarations made by Publius Cornelius Scipio and Gayus Flamigneus, Competitors for the Love of Locrece, both printed by William Caxton; some Orations and Epistles; and an English translation of Cæsar's Commentaries, as touching British affairs, supposed to be printed in the reign of Henry VIII. In the sixth of Edward IV., he drew up Orders for the placing of the Nobility in all Proceedings, and Orders and Statutes for Justs and Triumphs; and in the Ashmolean collection are Ordinances, Statutes and Rules, made by John Tiptoft, Erle of Worcester, and Constable of England, by the King's Commandment, at Windsor, 29th May, 6th Edward IV., to be observed in all Justs of Peers within the Realm of England, &c. He is also said to have written a Petition against the Lollards, and an Oration to the Citizens of Padua; and among the manuscripts belonging to Lincoln cathedral is a volume containing about twenty epistles, four of his writing, and the rest addressed to him.

WORCESTER, Edward Somerset, marquis of, an English nobleman, celebrated for his scientific studies, and supposed to have been the first inventor of the steam-engine. This nobleman engaged in the service of Charles I. during the civil war, and, after its termination, spent his time in retirement, and in the cultivation of natural philosophy and mechanics. In 1663, he published a book entitled the Scantlings of One Hundred Inventions, in which he first gave a description of the uses and effects of his engine; and he afterwards published a small pamphlet, called an Exact and True Definition of the most stupendous Water-commanding Engine, invented by the Right Honourable (and deservedly to be praised and admired) Edward Somerset, Lord Marquess of Worcester. (See *Steam.*) In neither of these works does he give any statement of the mode of constructing his engine; but, from his description and account of its effects, it may be inferred that its action depended on the condensation as well as the elastic force of the steam, and consequently that in principle it resembled the modern steam-engine. It seems also that he had actually constructed a machine upon a large scale, though, unfortunately for himself and for the interests of science, he was unable to excite the attention of the public towards his project, and was looked upon by his contemporaries as a visionary speculator. His death took place in 1667, at the age of seventy.

WORCESTERSHIRE; an inland county of England, bounded on the north by Shropshire and Staffordshire, on the east by Warwickshire, on the south by the county of Gloucester, and on the west by that of Hereford. Its figure is irregular, and several tracts of lands belonging to it are enclosed by neighbouring counties, partly, perhaps, in consequence of its having no natural boundaries. The quantity of arable land in this county has been estimated at 360,000 acres, chiefly devoted to the cultivation of wheat, barley, oats, beans, pease, vetches, turnips, and hops. Cabbages are sometimes grown as a field crop; the sands of Wolverley are noted for the produce of carrots, and potatoes are raised in great plenty in the vicinity of Bromsgrove. Worcestershire has long been distinguished for the growth of hops, of which three varieties are here cultivated, the red, the green, and the white. The orchards and plantations of fruit-trees, which are frequently placed in the hedge-rows, form a considerable source of profit, from the production of cider and perry, for the excellence of which the county is much noted. Worcestershire formerly contained the royal forests of Wyre and Feckenham, and the Chase of Malvern, which have long since been disafforested; though the forest of Wyre, extending from the north-western part of the county into Shropshire, still contains much timber, and the underwood is largely used for hop-poles. The principal rivers in this county are the Severn, the Avon, the Teme and the Stour. The Severn enters Worcestershire, a little to the north of Bewdley; and passing southward by Worcester and Upton, receives the Avon just below Tewkesbury, where it enters Gloucestershire. The Avon passes into this county from Warwickshire, and after a winding course by Evesham and Pershore, it proceeds to its confluence with the Severn. The Teme has its source in Shropshire, and entering this county westward of Tenbury, takes a serpentine course to its junction with the Severn below Worcester. The Stour rises in Shropshire, and flows southward through some part of this county to join the Severn at Stourport. The climate of Worcestershire is mild, temperate, and salubrious, and the atmosphere is generally clear, there being no lakes of any magnitude, and but little extent of marsh or moorland. The only mineral productions of this county which require notice are the salt-rocks of Droitwich, and coal-mines in the north-western district. In the neighbourhood of Dudley is found, imbedded in limestone, an extraneous fossil, called the Dudley Locust. The principal manufactures of this county are those of gloves, china-ware, and cabinet-work, extensively carried on at Worcester; the glass and iron-works at Dudley and Stourbridge; the manufacture of carpets and hombasins, especially of the former, for which Kidderminster has long been famous; and nails, needles, and fish-hooks, made at Redditch and Bromsgrove; besides cider, perry, and salt, already mentioned. The mineral springs are numerous, and are found at Worcester, Kidderminster, Bromsgrove, Churchill, Ahberton, and Malvern, the last of which are by far the most celebrated. This county contains the city of Worcester, which is its capital; the borough and market towns of Droitwich, Evesham, and Bewdley; and the market-towns of Bromsgrove, Dudley, Kidderminster, Pershore, Shipston, Stourbridge, Stourport, Tenbury, and Upton-upon-Severn. Population in 1841, 233,336.

WORD. In the scriptural sense, see *Logos;* in a philological meaning, see *Languages*, and *Philology.*

WORD, or WATCHWORD, in an army or garrison, is some peculiar word or sentence, by which the soldiers know and distinguish one another in the night, &c., and by which spies and designing persons are discovered. It is used also to prevent surprises. The word is given out, in an army, every night.

WORKINGTON; a seaport town in the county of Cumberland, situated on the south bank of the river Derwent, near the sea. The town contains a small theatre, and assembly and news rooms; the streets are mostly narrow and inconveniently arranged, but there are likewise many handsome houses of modern erection. A stone bridge of three arches, built at the expense of the county in 1763, crosses the river at the entrance to the town from Maryport. The harbour here is the safest on the coast, being secured by a breakwater, and lighted with gas. The quays, on which is a custom-house, subordinate to that at Whitehaven, are very commodious, and vessels are hence cleared out. Extensive collieries are worked here, and the trade consists chiefly in the export of their produce to Ireland and other parts of the kingdom. About 100 vessels are continually sailing backwards and forwards; a large number of people are also employed in ship-building, and the manufacture of articles in connexion with the same; besides about 400 in a straw-hat manufactory, for making imitation Leghorns. Salmon is taken along the coast. Population of town in 1841, 6045; of town and parish, 6994.

WORKSOP; a market-town and parish in the county of Nottingham, 146 miles north-north-west from London. It is situated in a valley, near the source of the river Ryton, towards the northern extremity of Sherwood Forest. It consists of two well-built streets, which are paved and lighted. The Chesterfield Canal passes the north side of the town; and at a short distance hence crosses the river by an aqueduct. The trade of the place consists chiefly in malt, which is sent in considerable quantities to Manchester and several other large towns. Population in 1841, 6197.

WORLD. See *Universe*, and *Earth* also *Commerce of the World*.

WORLITZ; a town in the duchy ot Anhalt-Dessau, three leagues from the city of Dessau, with 1800 inhabitants, and beautiful gardens in the English style, laid out by the late duke. Several descriptions have been given of it. There is a collection of ancient works of art, especially paintings, in the (so called) Gothic house, in this garden. See *Dessau*.

WORM. In the common acceptation of the word, this term is applied to caterpillars and other larvæ of insects; to those beings which dwell in the interior of living bodies; in short, to all small, soft, cylindrical animals, however various their conformation and modes of life. Even Linnæus included in his class *vermes*, the oyster, and the other mollusca, as well as the echini, polypi and medusæ, or sea-blubbers, animals which have since been very properly separated.

WORM, in gunnery; a screw of iron, to be fixed on the end of a rammer, to pull out the wad of a firelock, carbine or pistol, being the same with the wad-hook, only the one is more proper for small arms, and the other for cannon.

*Worm*, in chemistry, is a long, winding, pewter pipe, placed in a tub of water, to cool and condense the vapours in the distillation of spirits.

*Worm* a cable or hawser, in sea language, is to strengthen it by winding a small line, or rope, all along between the strands.

WORMIUS, Olaus; a learned Danish physician, born in 1588, at Aarhuus, in Jutland, where his father was a burgomaster. After some previous education, he went, in 1605, to the university of Marpurg, and then to Strasburg, where he studied medicine. He subsequently removed to Basle, and took the degree of M.D., having previously travelled in France, Italy, Holland and England. In 1613, he returned to his native country, and was made professor of the belles-lettres in the university of Copenhagen. In 1615, he was transferred to the chair of Greek literature, and, in 1624, to that of physic, which he held till his death. His academical engagements did not prevent him from practising as a physician; and the reputation of his skill occasioned his being employed by his sovereign, Christiern IV., who, in recompense of his services, made him a canon of the cathedral of Lund. His death took place in 1654. He was the author of several works relative to his profession, and also wrote in defence of the Aristotelian philosophy; but his most important productions are those concerning the antiquities of Denmark and Norway, among which may be mentioned *Fasti Danici*; *Litteratura Danica Antiquissima*; *Monumentorum Danicorum Libri sex*; *Lexicon Runicum*; and *Series Regum Daniæ*.

WORMS; an old German city on the left bank of the Rhine, formerly one of the free imperial cities. By the peace of Luneville, in 1801, it was ceded, with the whole left bank of the Rhine, to France; and since the peace of Paris, it has belonged to the province of Rhenish Hessia in Hesse-Darmstadt. It lies in an agreeable and fertile country, the Wonnegau (*land of joy*), so much praised by the *Minnesingers* (q. v.), and contains a population of 8000 inhabitants, who are supported chiefly by the cultivation of the vine, and the navigation of the Rhine. There are also some manufactures. The Protestant religion is the prevailing one. The Catholics have two churches, one of which is the cathedral, of which the foundation was laid in the eighth century, but which was not finished until the twelfth century. It is about 740 feet long, and 220 feet wide. The Lutherans have two churches, and the Reformed or Calvinists one. Among several excellent sorts of wine made here, the *Liebfrauenmilch* (milk of our dear lady) is distinguished. The grapes grow around the church of Our Lady, from which it has its name. Worms is one of the most ancient cities of Germany, and one of the most distinguished in the early history of the country. The Romans had a colony here: and the early Frankish kings, and even Charlemagne and the later Carlovingians, spent much time here. At a later period, it was the seat of the Rheno-Frankish dukes. In the history of the middle ages and that of modern times, Worms is also conspicuous. Many diets have been held here, of which those of 1495 and 1521 are the principal. The two held in the former year did much to establish order in Germany. At the latter, Luther defended his faith boldly before the emperor and the assembled members of the empire, concluding his address with the words, "Here I stand; I cannot do otherwise: so help me God! amen." Worms derived importance also from its manufactures, commerce, and population, which, even towards the end of the thirty years' war, amounted to 30,000 souls, and, as a member of the confederation of the Rhenish cities, was engaged in the principal quarrels with the neighbouring princes. It has declined during the two last centuries, particularly on account of the endless wars between Germany and France. In 1689, this city, as well as Spires, was almost

entirely destroyed by the French, by the orders of Louvois. The city has been since rebuilt; yet there are even now many gardens where formerly there were buildings. In the early part of the French revolutionary war, Worms again suffered much, being occupied alternately by both the hostile armies. Worms was formerly a bishop's see, the prince-bishop of which was always the archbishop of Mayence.

WORMWOOD (*artemisia*); a genus of compound flowers, which may be recognised by the dissected and usually downy leaves, and the small roundish heads of flowers. The common species (*A. absinthium*) is tonic, anthelmintic, stomachic, and slightly stimulating, and has been used with advantage in intermittents, gout, scurvy and dropsy. The seed is used by the rectifiers of British spirits, and the plant is a good deal cultivated in certain parts of England for this purpose. The leaves and points of the shoots of the tarragon (*A. dracunculus*) are used as an ingredient in pickles. A simple infusion of the plant in vinegar makes a pleasant fish sauce: it is eaten along with beef-steaks, and is employed, both in Europe and Persia, to correct the coldness of salad herbs, and season soups and other dishes. The plant is of the easiest culture, but, like the other species, requires a dry soil. From the acrid leaves of *A. Chinensis*, moxa is obtained—a substance much in use among the Chinese as an actual cautery. For this purpose, the moxa is laid upon the part affected, and set on fire. Numerous species of *artemisia* are found upon the plains of Missouri.

WORONZOFF; a distinguished Russian family. Three females belonging to it are conspicuous in Russian history:—1. *Elizabeth Woronzoff;* the mistress of the grand prince, afterwards emperor Peter III. She subsequently married the senator Polänski. 2. The countess *Butterlin.* 3. The princess *Daschkoff,* for some time the confidant of Catharine II. She took a very active part in the dethroning of the emperor, whose mistress her sister was, and in the elevation of Catharine to the throne. The uncle of these two, the high chancellor count Michael Woronzoff, was the head of the Swedish party, and the enemy of the chancellor Bestuscheff, the head of the Danish party. When the latter fell into disgrace, in 1757, count Woronzoff was made chancellor of the empire. Count Alexander Woronzoff was made, in 1802, chancellor of the empire by the emperor Alexander, and received the direction of the department of foreign affairs. His brother, S. Woronzoff, was Russian ambassador in London when the French revolution broke out, and took an active part in all the negotiations between England and Russia during the reigns of Catharine, Paul I. and Alexander. He died in London in June, 1832. His son, *Michael Woronzoff,* is governor of New Russia (residing at Odessa). He was a general of infantry in the wars of his country in 1813, 1814 and 1815, against France. In 1826, he was deputed by the emperor Nicholas, with Ribeaupierre, to negotiate, at Akermann, with the Turkish commissioners, respecting the misunderstandings between Russia and the Porte.

WORSHIP OF GOD. The expression of veneration for the highest of beings, of submission to his will, and of thankfulness for his goodness, though it may be offered in the secret stillness of the heart, will often be conveyed by external visible signs, through which the feelings of awe and love endeavour to manifest themselves in the most forcible and lively manner. These acts of homage to a superior power will be characterized by more or less of rudeness or elevation, as the conceptions of the object of worship are more or less gross or spiritual. Prayer and sacrifice, accompanied with various ceremonies, are the most general external acts, by which the feelings of religious veneration are expressed; and while some nations and sects are eager to surround these acts with all the splendour of earthly pomp, others think to render them more worthy of the Being to whom they are addressed, by the absence of all worldly show. If the worship of God, says Paley, be a duty of religion, public worship is a necessary institution; because without it the greater part of mankind would exercise no religious worship at all. Besides, assemblies appointed for this purpose afford regularly recurring opportunities for moral and religious instruction to those who would otherwise receive no such instruction. If we advert to facts, it will be found that the general diffusion of religious knowledge among all orders of Christians, compared with the intellectual condition of barbarous nations, can be ascribed to no other cause than the regular establishment of assemblies for divine worship; in which portions of Scripture are recited and explained, or the principles of Christian erudition are so constantly taught in sermons, incorporated with liturgies, or expressed in extempore prayer, as to imprint, by the very repetition, some knowledge and memory of these subjects upon the most unqualified and careless hearer. But while the different forms of Christian worship resemble each other in their fundamental principle, there is almost every variety in the details of the ceremony; and there have been not less violent controversies and causes of offence, afforded by different views of the ceremonial arrangements of worship, than by differences of opinion in matters of dogmatical theology or ecclesiastical government. The heathens objected to the early Christians, that their worship had none of the external splendour of other religions—no temple, no altars, no images. The primitive Christians assembled together in social worship, but they did not attribute any peculiar sanctity to the spot of their meeting, which, in fact, was commonly the house of one of the congregation. In the course of time, however, as they became more numerous, they met in rooms or buildings appropriated for the purpose. When the congregation was assembled, the first act of divine service performed was the reading of the Holy Scriptures, as was the custom in the Jewish synagogues. At first, the Old Testament was of course alone used for this purpose; but in process of time, as the books of the New Testament were composed, these were also read in the churches. The reading of the Scriptures was followed by a short and familiar address, explaining and applying what had been read, and exhorting the hearers to piety and virtue, and by the singing of psalms or hymns, selected from the Scriptures, or composed for the purpose. The congregation then rose up, and joined in prayer, with their faces turned towards the east. It is a subject of dispute whether precomposed forms or extempore effusions were used in prayer. See *Liturgy, Mass, Lord's Supper,* &c.

*Worship, Minister of Public* (in French, *Ministre du Culte;* in Prussia, *Minister des Cultus*). In those countries in which the direction of every thing is in the executive, and the whole action of

society is regulated by the government (a system more consistently and effectually pursued in Prussia than, probably, in any other country), not only the administration of justice, but even of religious worship, is under the superintendence of a minister—an abuse which at one time was carried to a great extreme in Prussia. There is still in that country a "minister for the supervision of ecclesiastical affairs, of schools, and medicine." The use of the word *cultus* has been discontinued. The minister of public worship, however, does not superintend merely the forms of religious worship, but all ecclesiastical affairs. He appoints the various examinations which candidates for the ministry must pass through before they can be admitted to holy orders; investigates complaints against clergymen, or directs inquiries to be made, &c.; settles disputes between Catholics and Protestants, &c. In France, the ministry of public instruction is generally connected with that of the "*culte*," which latter has the management of ecclesiastical affairs in as far as they have a political character (in other respects they are under the control of the bishops, &c.). These two departments, however, are not always connected.

WORSLEY, Sir Richard, son of Sir Thomas Worsley, born in 1751, in the Isle of Wight, succeeded to the title in his eighteenth year, and soon after visited the continent, where he cultivated his taste for antiquities by the study of the remains of ancient Rome, and made some large purchases of statues, marbles, and other articles of *virtù*, which, on his return to England, it formed his principal amusement to classify and arrange. A catalogue of this collection was afterwards published under the title of *Musæum Worsleianum*, in two folio volumes. (See *Visconti*.) Sir Richard published a History of the Isle of Wight (in 1 vol., 4to., with engravings of the principal seats, views, &c., by Godfrey). He was many years in parliament as representative of the borough of Newport, and held a situation about the person of king George III., as comptroller of the royal household. He was also governor of the island, where he died in 1805.

WORSTED; a thread spun of wool that has been combed, and which, in the spinning, is twisted harder than ordinarily. It is chiefly used either to be knit or woven into stockings, caps, gloves, &c. Worsted has obtained its name from Worstead, a market-town in the county of Norfolk, (population 830), where the manufacture of the article was first introduced. The manufactures, which derived their name from the place, are now removed to Norwich and its vicinity.

WORT. See *Brewing*, and *Malt*.

WOTTON, Sir Henry, a conspicuous political and literary character in his own age, youngest son of Sir Robert Wotton, was born in 1568. After receiving a classical education at Winchester school, he was entered at Oxford, where he much distinguished himself by his attention to logic and philosophy, and composed a tragedy. Having studied civil law, under an eminent Italian professor, he became a proficient in the Italian language. His father bequeathing him a moderate income, he determined, in 1589, to travel, and visited all the principal countries of the continent. On his return, he was appointed secretary to the earl of Essex, whom he attended in his maritime expeditions against the Spaniards, and afterwards to Ireland. On the fall of that nobleman, he quitted the kingdom, and resided at Florence, where he composed a treatise, printed after his death, entitled the State of Christendom. While thus employed, the grand-duke of Tuscany having intercepted some letters disclosing a plot to take away the life of James, king of Scotland, he engaged Wotton to carry secret intelligence of it to that prince. This service he ably performed in the character and guise of an Italian, and returned to Florence. When James came to the English crown, he sent for Wotton, knighted him, and, in 1604, employed him as an ambassador to the republic of Venice. As Wotton passed through Augsburg, being desired to write in an album, he wrote, in Latin, that "an ambassador is a good man, sent abroad to lie for the good of his country." This innocent sally was, by the malignity of Schioppius, represented as a state maxim, avowed by the religion of the king of England. James, who thought nothing relative either to king-craft or state-craft a subject for wit, was, in consequence, highly displeased; and, on his return, Wotton remained five years unemployed. At length he recovered the royal favour, and was trusted with a mission to the United Provinces, and subsequently restored to his former post at Venice, where he remained three years. Other missions followed, to the duke of Savoy, and to various princes in Germany, on the affairs of the elector palatine. A third embassy to Venice closed his diplomatic labours, from which he did not return until the death of James, when, in 1624, he was made provost of Eton college, as a reward for his various services. The first fruits of his leisure were his Elements of Architecture. The statutes of the college requiring him to assume a clerical character, he took deacon's orders, and spent the remainder of his life in literary leisure, social hospitality, and innocent amusement. He had planned a life of Luther; but, by the persuasion of Charles I., he laid it aside for a history of England, in which he made very little progress. The arrears of his demands on the crown remaining unpaid, he continued embarrassed to his death, which took place in December, 1639, in the seventy-second year of his age. Sir Henry Wotton was a person of sound understanding, poignant wit, and great accomplishments, in whom the scholar and the man of the world were very happily blended. In addition to the works already mentioned, there is a collection of miscellanies published, after his death, under the title of *Reliquiæ Wottonianæ*, several times reprinted. It consists of lives, letters, poems and characters, displaying a lively fancy and penetrating understanding, though somewhat obscured by the pedantry of the age. Of his poems, one, entitled a Hymn to God in my latter Sickness, is admired for energy of expression and harmonious versification. There is a Life of Sir H. Wotton by Walton.

WOTTON, William, an English clergyman of distinguished learning, was born in 1666, and, under his father's tuition, acquired such a knowledge of languages, during his childhood, as caused him to be regarded as the wonder of the time. In his sixth year, he could construe the Latin, Greek, and Hebrew tongues, chiefly by the aid of an extraordinary retentive memory. In consequence of this precocity, he was entered at Catherine hall, Cambridge, before he was ten years old. He took the degree of bachelor of arts in his thirteenth year, some time before which he had been celebrated in a copy of verses, not only for his acquaintance with the learned languages, including Arabic, Syriac, and

Chaldee, but for his knowledge of geography, logic, philosophy, and mathematics. In 1691, he was made chaplain to the earl of Nottingham, who, in 1693, presented him to a rectory. The first fruit of his extensive reading appeared in 1694, in his Reflections upon Ancient and Modern Learning, the plan of which was to institute a comparison between the ancients and moderns, in all that regarded arts, science, and literature. To a second edition, in 1697, was annexed doctor Bentley's Dissertation on Phalaris, which involved Wotton in the controversy respecting the merits of the ancients and the moderns, and subjected him to the satire of Swift, in the Battle of the Books. Embarrassed in circumstances, in consequence of some irregularities, he was obliged, in 1714, to retire into South Wales, where he employed himself in writing on ecclesiastical antiquities and kindred subjects. He also wrote various other pieces, but none which made any addition to his fame: and he may be enumerated among the instances in which early proficiency, resting principally on strength of memory, disappoints expectation. He died in 1726, at the age of sixty.

WOU WOU. See *Ape*.

WOUNDS are divided, by writers on surgery, into several kinds, the distinctions being founded either upon the sort of weapon with which the injury has been inflicted, or upon the circumstance of a venomous matter having been introduced into the part, or, lastly, upon the nature of the wounded parts themselves, and the particular situation of the wound. Hence, we have *cuts*, *incisions*, or *incised wounds*, which are produced by sharp-edged instruments, and are generally free from all contusion and laceration. The fibres and texture of the wounded part have suffered no other injury but their mere division; and there is, consequently, less tendency to inflammation, suppuration, gangrene, and other bad consequences, than in the generality of other species of wounds. Incised wounds also, may usually be healed with greater quickness and facility than other wounds which are accompanied with more or less of contusion and laceration: the surgeon has only to bring the opposite sides of the wound into contact with each other, and keep them in this state a few hours, and they will unite and grow together. Another class of wounds are *stabs*, or *punctured wounds*, made by the thrusts of pointed weapons, as bayonets, lances, swords, daggers, &c., and also by the accidental and forcible introduction of considerable thorns, nails, &c., into the flesh. These wounds frequently penetrate to a great depth so as to injure large blood-vessels, viscera, and other organs of importance: and, as they are generally inflicted with much force and violence, the parts suffer more injury than what would result from their simple division. It also deserves notice that a great number of the weapons or instruments by which punctured wounds are occasioned, increase materially in diameter from the point towards their other extremity; and hence, when they penetrate far, they must force the fibres asunder like a wedge, and cause a serious degree of stretching and contusion. It is on this account that bayonet wounds of the very soft parts are ordinarily often followed by violent inflammation, an alarming degree of tumefaction, large abscesses, fever, delirium, and other very unfavourable symptoms. The opening which the point of such a weapon makes is quite inadequate to the passage of the thicker part of it, which can only enter by forcibly dilating, stretching, and otherwise injuring the fibres of the wounded flesh. A third description of wounds are the *contused* and *lacerated*, which strictly comprehend, together with a variety of cases produced by the violent application of hard, blunt, obtuse bodies to the soft parts, all those interesting and common injuries denominated *gunshot* wounds. Many bites rank also as contused and lacerated wounds. In short, every solution of continuity which is suddenly produced in the soft parts by a blunt instrument or weapon which has neither a sharp point nor edge, must be a contused, lacerated wound. It has been remarked that, in case of violent death by gunshot wounds, the expression of the countenance is always that of languor, whatever may be the natural energy of the sufferer's character; but in death from a stab, the countenance preserves its traits of feeling or ferocity and the mind its bias, to the last. See *Surgery*.

*Poisoned wounds* are those which are complicated with the introduction of a venomous matter or fluid into the part. Thus, the stings and bites of a variety of insects afford us examples of poisoned wounds; and the surgeon, in the dissection of putrid bodies, or in handling instruments infected with any venomous matter, is exposed to the danger of poisoned wounds from cuts. The most dangerous, however, of this class of wounds, occur from the bites of the viper, the rattlesnake, &c. (see *Venomous Animals*), or from those of rabid animals. (See *Hydrophobia*.) Wounds may, likewise, be universally referred to two other general classes, the simple and complicated. A wound is called *simple* when it occurs in a healthy subject, has been produced by a clean, sharp-edged instrument, is unattended with any serious symptoms, and the only indication is to reunite the fresh-cut surfaces. A wound, on the contrary, is said to be *complicated* whenever the state of the whole system, or of the wounded part, or the wound itself, is such as to make it necessary for the surgeon to deviate from the plan of treatment requisite for a simple wound. The differences of complicated wounds must, therefore, be very numerous, as they depend upon many incidental circumstances, the principal of which, however, are hemorrhage, nervous symptoms, contusion, the unfavourable shape of the injury, the discharge or extravasation of certain fluids, indicating the injury of particular bowels or vessels, &c. All large or deep wounds are attended with more or less of symtomatic fever, which usually comes on at a period varying from sixteen to thirty-six hours after the infliction of the injury, and is generally of the inflammatory, but sometimes of an asthenic character. It is of great consequence to attend to the type of this fever in the treatment; for the loss of blood, which may be required and sustained with impunity in the one species of fever, may prove most injurious, if not fatal, in the other.

WOURALI POISON. Waterton, the eccentric wanderer in South America, gives the following interesting account of the method pursued by the Indians in making wourali poison, a species of matter of the most powerful action on animal life, but which destroys life so gently, that the victim appears to be in no pain whatever; and probably, says he, were the truth known, it feels none, saving the momentary smart at the time the arrow enters. A day or two before the Macoushi Indian prepares his poison, he goes into the forest in quest of the ingredients. A vine grows in these wilds which is called wourali, and it is from this that the poison takes

its name, and it is tne principal ingredient. When he has procured enough of this, he digs up a root of a very bitter taste, ties them together, and then looks about for two kinds of bulbous plants, which contain a green and glutinous juice. He fills a little vessel, which he carries on his back, with the stalks of these, and lastly, ranges up and down till he finds two species of ants; one of them is very large and black, and so venomous, that its sting produces a fever It is most commonly to be met with on the ground. The other is a little red ant, which stings like a nettle, and generally has its nest under the leaf of a shrub. After obtaining these, he has no more need to range the forest. A quantity of the strongest Indian pepper is used; but this he has already planted round his hut. The pounded fangs of the Labarri snake, and those of the Counacouchi, are likewise added. These he commonly has in store; for, when he kills a snake, he generally extracts the fangs and keeps them by him. Having thus found the necessary ingredients, he scrapes the wourali vine and bitter root into thin shavings, and puts them into a kind of colander made of leaves; this he holds over an earthen pot, and pours water on the shavings; the liquor which comes through has the appearance of coffee. When a sufficient quantity has been procured, the shavings are thrown aside. He then bruises the bulbous stalks, and squeezes a proportionate quantity of their juice through his hands into the pot. Lastly, the snake's fangs, ants, and pepper, are bruised and thrown into it. It is then placed on a slow fire, and as it boils, more of the juice of the wourali is added, according as it may be found necessary, and the scum is taken off with a leaf. It remains on the fire till reduced to a thick scum of a deep brown colour. As soon as it has arrived at this state, a few arrows are poisoned with it to try its strength. If it answer the expectations, it is poured out into a calabash, or little pot of Indian manufacture, which is carefully covered with a couple of leaves, and over them a piece of deer's skin, tied round with a cord. They keep it in the most dry part of the hut, and from time to time suspend it over the fire to counteract the effects of dampness.

Among the instances adduced of the extraordinary effects of wourali poison, Waterton mentions the following:—A large well-fed ox, from nine hundred to a thousand pounds weight, was led to a stake by a rope sufficiently strong to allow him to move to and fro. In order to bring him down, three poisoned arrows were put into him; one was sent into each thigh, just above the hock, in order to avoid wounding a vital part, and a third was shot traversely into the extremity of the nostril. The poison seemed to take effect in four minutes. Conscious as though he would fall, the ox set himself firmly on his legs, and remained quite still in the same place, till about the fourteenth minute, when he smelled the ground, and appeared as if inclined to walk. He advanced a pace or two, staggered and fell, and remained extended on his side, with his head on the ground. His eye, a few minutes ago so bright and lively, now became fixed and dim; and though you put your hand close to it as if to give him a blow there, he never closed his eyelid. His legs were convulsed, and his head from time to time started involuntarily; but he never showed the least desire to raise it from the ground. He breathed hard, and emitted foam from his mouth. The startings, or subsaltus tendinum, now became gradually weaker and weaker; his hinder parts were fixed in death; and in a minute or two more, his head and fore-leg ceased to stir. Nothing now remained to show that life was still within him, except that his heart faintly beat and fluttered at intervals. In five-and-twenty minutes from the time of his being wounded he was quite dead. His flesh was very sweet and savoury at dinner.

WOUVERMANS, Philip, was born at Haerlem, in 1620, and was the son of Paul Wouvermans, a painter of history, of mean talents, who taught him the rudiments of the art; after which he became the scholar of John Wynants, and arrived at such a degree of perfection as to be esteemed superior to all his contemporaries. By the instruction and example of his master, the proficiency of Wouvermans was very remarkable; but to the knowledge of colouring and penciling which he acquired in that school, he added the study of nature, in which he employed himself with such critical attention, as to excel his master in the choice of his scenes, the excellence of his figures, and the truth of his representations. The subjects of which he seemed most particularly fond, were huntings, hawkings, encampments of armies, farriers' shops, and all kinds of scenes that afforded him a proper and natural opportunity of introducing horses, which he painted in the greatest perfection. In contemplating the works of this inimitable artist, we find ourselves at a loss to determine what part is most worthy of our applause and admiration; whether the sweetness of the colouring; the correctness of his design, his cattle, or his figures; the charming variety of attitudes in his horses; the free and yet delicate touchings of his trees; the beautiful choice of his scenery; the judicious use he makes of the chiaro-oscuro; or the spirit that animates the whole. His genius and invention were so strong and lively, that none of his pictures have either the same grounds or the same distances; for he varied them perpetually, with inexpressible skill; in some, representing simple, unembellished nature, and in others, scenes enriched with architecture, fountains, or edifices of a beautiful construction. His figures are always finely drawn, with expressions suitable to the subject; and the attitudes he chose were such as appeared unconstrained, natural, and perfectly agreeable. He had an amazing command of his pencil, so that he instantly and effectually expressed every idea conceived in his mind, and gave to his pictures an astonishing force, by broad masses of light and shadow, which he contrasted with peculiar judgment, and gave an uncommon degree of transparence to the colouring of the whole. The pencil of Wouvermans was mellow, and his touch was free. Though his pictures were finished most delicately, his distances recede with true perspective beauty; and his skies, and trees and plants are all exact and lovely imitations of nature. In his latter time, his pictures had rather too much of the grayish and blue tint; but, in his best days, he was not inferior, either in correctness, colouring or force, to any of the artists of Italy. Yet, notwithstanding his uncommon merit, he had not the good fortune, during his life, to meet with encouragement equal to his desert; for, with all his assiduity and extreme industry, he found it difficult to maintain himself and his family. He seemed to be a stranger to the artifices of the merchants, who therefore imposed on him under the disguise of zeal for his interest, and, while they artfully enriched themselves by his

works, contrived to keep him depressed and narrow in his circumstances. Wouvermans could not help feeling the neglect with which he was treated; and it affected him so strongly, that, a few hours before he died, he ordered a box filled with his studies to be burned; saying, "I have been so badly rewarded for all my labours, that I would prevent my son from being allured, by those designs, to embrace so miserable and uncertain a profession as mine." Some authors, however, ascribe this sacrifice to other motives, and say it proceeded from his dislike to his brother Peter, being unwilling that he should reap the product of his labours; and some again allege that he intended to compel his son to seek the knowledge of nature from his own industry, and not indolently depend on copying those designs. Wouvermans etched one plate, representing a horse standing, and tied to a tree. It is beautifully done, but uncommonly scarce. He died in 1668. After the death of Wouvermans, the value of his pictures increased to an incredible degree; they were universally coveted through every part of Europe, particularly by the dauphin of France and the elector of Bavaria, who bought all that could be procured, at very large prices.

WRANGEL, Charles Gustavus, count of, Swedish field-marshal, a distinguished military commander of the seventeenth century, was descended from an old and illustrious Swedish family.—His father, *Herman Wrangel*, a Swedish counsellor of state, and field-marshal, was governor of Livonia at the time of his death, in 1644. The son, Charles Gustavus, entered the military service at an early age, and was brought up in the school of the celebrated Gustavus Adolphus. Under that prince he served in Germany; and, on the death of general Baner, in 1641, Wrangel, who then had the rank of major-general, was one of those who commanded the Swedish forces, under very difficult circumstances, until the arrival of the new commander-in-chief, Torstenson. Wrangel continued to serve under that general, and accompanied him on his daring march to Holstein (1643), to carry the war into Denmark. (See *Thirty Years' War.*) After the death of admiral Fleming, the command of the Swedish fleet was confined to Wrangel, who was at first obliged to yield to the numerical superiority of the Danish naval force; but being reinforced by a Dutch squadron, he defeated the enemy off the island of Femern. He then commanded a detached corps in Holstein and Sleswick, until the peace of Brömsebrö (1645). In 1646, Torstenson having resigned the command, Wrangel was associated with Königsmark in that trust, and, having formed a junction with the French forces under Turenne, their combined operations forced the elector of Bavaria to accede to an armistice, at Ulm, in March, 1647. The elector having afterwards disavowed this act, the allied forces defeated the combined Austrian and Bavarian armies at Zusmarshausen, near Augsburg, May 17, 1648; and Wrangel occupied Bavaria until the peace of Westphalia, in 1648, put an end to hostilities. After the accession of Charles Gustavus to the throne of Sweden, Wrangel accompanied his sovereign in the expedition against Poland, and was present at the celebrated three days' battle of Warsaw (July 18—20, 1656). In the course of this war, Denmark having entered upon hostilities against Sweden (1657), Wrangel laid siege to the fortress of Kronburg, which was obliged to surrender after twenty-one days (September 6, 1658). He then took command of the Swedish fleet destined to attack Copenhagen; but the expedition proved unsuccessful, on account of the arrival of a Dutch fleet to the assistance of the Danes. The death of the king of Sweden put an end to the war in 1660. In 1674, Louis XIV. having declared war against the German empire, Sweden engaged in the hostile operations on the side of France, and Wrangel commanded an army of 16,000 men, which invaded Brandenburg; but the ill success of this expedition is probably to be imputed to the sickness of the commander. The great elector, Frederic William, at the head of 6000 cavalry, attacked the Swedish forces by surprise, and gained a complete victory at Fehrbellin, June 18, 1675. The Swedes were obliged to evacuate Brandenburg, and even lost a part of Pomerania. Wrangel, who soon after retired from service on account of his infirmities, died the following year. In 1645, he had been rewarded for his services with the title of count.

WRANGLER, Senior, in the university of Cambridge; the student who passes the best examination in the senate-house for the first degree (that of bachelor) in arts. (See *Cambridge.*) They who follow next in the same division, are respectively termed *second, third, fourth,* &c., *wranglers.* In a similar manner, they who compose the second rank of honours are designated as *first, second, third,* &c., *optimi* (best); those of the third order, *first, second, third,* &c., *junior optimi* (second best); and the remainder are termed *οἱ πολλοὶ* (the mob).

WRAXALL, Sir Nathaniel William, born in 1751, at Bristol, where his father and grandfather were merchants, was educated in his native city, and, in 1769, was sent to Bombay, in the service of the East India company. He was there employed, in 1771, as judge advocate and paymaster of the forces of that presidency. Next year he returned to England, and then travelled on the continent, visiting almost every country from Lapland to Lisbon. On his return, he sent to the press a Voyage round the Baltic (1775). In 1777, he published the History of the Kings of France, of the House of Valois (2 vols., 8vo.), and History of the Reign and Age of Henry III. and IV., Kings of France (3 vols. quarto). In 1780, he was elected member of parliament for the borough of Hindon, in 1784, for Lugershall, and, in 1760, for Wallingford. His Memoirs of the Courts of Berlin, Dresden, Warsaw, and Vienna, were given to the world in 1799. While in parliament, he sometimes opposed Mr Pitt, and at other times supported him. In 1813, he was raised to the dignity of a baronet, and, in 1815, published his last work, under the title of Historical Memoirs of His Own Time (2 vols., 8vo.). A story was introduced into this work respecting count Woronzow, the Russian ambassador, the truth of which the count denied; and, deeming the publication to be libellous, he had recourse to a criminal prosecution. It was tried in the court of king's bench, and Sir Nathaniel was found guilty, and sentenced to a fine and six months' imprisonment. He died in 1831.

WREATH, in heraldry; a roll of fine linen or silk (like that of a Turkish turban), consisting of the colours borne in the escutcheon, placed in an achievement between the helmet and the crest, and immediately supporting the crest.

WRECK, in navigation, is usually understood to mean any ship or goods driven ashore, or found floating at sea in a deserted or unmanageable condition; but, in the legal sense of the word in Eng-

land, *wreck* must have come to land: when at sea, it is distinguished by the barbarous appellations of *flotsam*, *jetsam*, and *ligan*. (See *Flotsam*.) In nothing, perhaps, has the beneficial influence of the advance of society in civilization been more apparent than in the regulations with respect to the persons and property of shipwrecked individuals. In most rude and uncivilized countries, their treatment has been cruel in the extreme. Amongst the early Greeks and Romans, strangers and enemies were regarded in the same point of view. (*Hostis apud antiquos, peregrinus dicebatur.—Pomp. Festus*; see also Cicero, *De Offic.* lib. i. c. 12.) Where such inhospitable sentiments prevailed, the conduct observed towards those that were shipwrecked could not be otherwise than barbarous; and, in fact, they were, in most instances, either put to death or sold as slaves. But, as law and good order grew up, and commerce and navigation were extended, those who escaped from the perils of the sea were treated in a way less repugnant to the dictates of humanity; and at length the Roman law made it a capital offence to destroy persons shipwrecked, or to prevent their saving the ship; and the stealing even of a plank from a vessel shipwrecked, or in distress, made the party liable to answer for the whole ship and cargo. (*Pand.* 47. 9. 3.) During the gloomy period which followed the subversion of the Roman empire, and the establishment of the northern nations in the southern parts of Europe, the ancient barbarous practices with respect to shipwreck were every where renewed. Those who survived were, in most countries, reduced to servitude; and their goods were every where confiscated for the use of the lord on whose manor they had been thrown. (Robertson's *Charles V.*, vol. i, note 29.) But nothing, perhaps, can so strongly evince the prevalence and nature of these enormities as the efforts that were made, as soon as governments began to acquire authority, for their suppression. The regulations as to shipwreck, in the laws of Oleron, are, in this respect, most remarkable. The 35th and 38th articles state, that "Pilots, in order to ingratiate themselves with their lords, did, like faithless and treacherous villains, sometimes willingly run the ship upon the rocks, &c.;" for which offence they are held to be accursed and excommunicated, and punished as thieves and robbers. The fate of the lord is still more severe. "He is to be apprehended, his goods confiscated and sold, and himself fastened to a post or stake in the midst of his own mansion house, which being fired at the four corners, all shall be burned together, the walls thereof be demolished, the stones pulled down, and the site converted into a market-place, for the sale only of hogs and swine, to all posterity." The 31st article recites, that, when a vessel was lost by running on shore, and the mariners had landed, they often, instead of meeting with help, "were attacked by people more barbarous, cruel and inhuman than mad dogs; who, to gain their moneys, apparel, and other goods, did sometimes murder and destroy these poor distressed seamen. In this case, the lord of the country is to execute justice by punishing them in their persons and their estates, and is commanded to plunge them in the sea till they be half dead, and then to have them drawn forth out of the sea, and stoned to death." Such were the dreadful severities by which it was attempted to put a stop to the crimes against which they were directed. The violence of the remedy shows, better than any thing else, how inveterate the disease had become. The law of England, like that of other modern countries, adjudged wrecks to belong to the king; but the rigour and injustice of this law was modified as early as the reign of Henry I., when it was ruled, that, if any person escaped alive out of the ship, it should be no wreck: and, after various modifications, it was decided, in the reign of Henry III., that if goods were cast on shore, having any marks by which they could be identified, they were to revert to the owners, if claimed any time within a year and a day. By the statute 27 Edw. III., c. 13, if a ship be lost, and the goods come to land, they are to be delivered to the merchants, paying only a reasonable reward or salvage to those who saved or preserved them. But these ancient statutes, owing to the confusion and disorder of the times, were very ill enforced; and the disgraceful practices previously alluded to continued to the middle of the last century. A statute of Anne (12 Ann. st. 2, c. 18), confirmed by the 4 Geo. I., c. 12, in order to put a stop to the atrocities in question, orders all head officers, and others of the towns near the sea, upon application made of them, to summon as many hands as are necessary, and send them to the relief of any ship in distress, on forfeiture of £100; and in case of assistance given, salvage is to be assessed by three justices, and paid by the owners. Persons secreting any goods cast ashore, are to forfeit treble their value; and if they wilfully do any act whereby the ship is lost or destroyed, they are guilty of felony without benefit of clergy. But even this statute seems not to have been sufficient to accomplish the end in view: and, in 1752, a new statute (26 Geo. II., c. 19) was enacted, the preamble of which is as follows:—"Whereas, notwithstanding the good and salutary laws now in being against plundering and destroying vessels in distress, and against taking away shipwrecked, lost or stranded goods, many wicked enormities have been committed, to the disgrace of the nation, and the grievous damage of merchants and mariners of our own and other countries, be it, &c.;" and it is then enacted, that the preventing the escape of any person endeavouring to save his life, or wounding him with intent to destroy him, or putting out false lights in order to bring any vessel into danger, shall be capital felony. By the same statute, the pilfering of any goods cast ashore, is made petty larceny. By statute 1 and 2 Geo. IV., c. 75, it is enacted that any person or persons wilfully cutting away, injuring or concealing any buoy or buoy-rope attached to any anchor or cable belonging to any ship, whether in distress or otherwise, shall be judged guilty of felony, and may, upon conviction, be transported for seven years. The salvage, or the amount to be paid to those who have assisted in saving the wreck, is determined by the court of admiralty, who proportion the allowance to the risk and labour incurred. Sometimes as much as half the value of the property saved has been allowed. For salvage in cases of recapture, see *prize*.

WREN (*troglodytes*); a genus of birds, closely allied to the warblers, distinguished by their small size, slender beak, short and rounded wings, mottled plumage, and the habit of holding the tail elevated. The common wren is, with the exception of the golden-crowned wren, the smallest bird in Europe. It is fond of prying about crevices and holes in walls, ruined buildings, &c., and is constantly in motion, searching for insects, which form its accustomed food. It nestles in similar situations, or

even under the eaves of houses. It braves the severest winters, and, like the golden-crowned wren, is resident even in Zetland. It sings sweetly in spring.

The golden-crowned wren is distinguished by an orange crown. Its length is 4½ inches, breadth, 6⅜; weight under 80 grains. The weight of the common wren is nearly 3 drams. The most usual haunts of the golden-crowned wren are tall trees, particularly the oak, the yew, and the various species of pine and fir. In these it builds its nest, a very neat and elegant structure, the shape of which varies according to the situation in which it is placed. It is most commonly open at the top, like that of the chaffinch; but sometimes, even under the sheltering boughs of a Norway fir, it is covered with a dome, and has an opening on one side. It is always ingeniously suspended beneath the branch, like those of many tropical birds, being the only instance of the kind amongst those of Great Britain. The eggs are nine or ten in number, and are small, round, and white. The golden-crowned wren is by no means so shy of the neighbourhood of man as is generally supposed. Though it abounds in forests, yet it equally frequents gardens, occasionally even in the suburbs of large towns, and very often builds close to the house, most commonly in a yew or fir, at the height of from five to twenty or thirty feet from the ground. It is very fearless of observers; and will allow you to approach within a yard of it, while engaged, as it generally is, in hunting for insects on the stems and branches of trees. Perhaps the best time for watching it is a hot sunny day in summer or autumn. In a still and sultry noon, when not a leaf is stirring, and almost every other bird has retired from the heat of the sun into the shadiest thickets, the little solitary golden-crowned wren is to be seen flitting noiselessly from spray to spray, with unwearied activity, in search of its food, paying no attention to any one who happens to be watching it, and never for a moment remaining in a state of rest. Its movements are unlike those of any other bird, except, indeed, the blue-tit,—but even his do not equal in lightness and airiness this little wren. It flutters over the slenderest twigs like a butterfly,—now on one side, now on the other,—sometimes above the branch, sometimes beneath, hanging with the head downwards,—often at the end of it, suspended in the air by its tiny wings, which it quivers without the slightest sound, so that unless you see it, if it were ever so close to you, you would not be aware of its presence except for the little low chirp which it occasionally emits, and which is more like that of an insect than a bird. In shape and plumage, too, it is superior to most of the feathered inhabitants of our woods and gardens: the latter is a beautiful mixture of green and yellow, with white bars on its wings; and on its head the golden crest, bordered with black, from which it takes its name. In the spring and summer it sings regularly, beginning about the middle of March, and continuing till the end of July. Its song is very soft and low, like a whisper, and, like that of the grasshopper-lark, is no louder at the distance of one yard than of twenty. During the greater part of the year, it haunts tall trees, and never alights on the earth; but in the winter it is frequently seen pecking for insects on the grass, or among dead leaves, and even on a heath at some little distance from any tree; and when thus engaged it will let you approach it sufficiently near to hear the little snap of its beak when it has found its prey. There are two other species of wren common to this country—the yellow wren and the lesser pettychaps; the former so called from its colour, and the latter from its double notes, resembling the words *chip, chop*.

WREN, Sir Christopher, a celebrated English architect, was the son of the rector of East Knoyle, in Wiltshire, where he was born, in 1632. He entered as a student at Wadham college, Oxford, in 1646, previously to which time he had given proofs of his genius, by the invention of astronomical and pneumatic instruments. In 1647, he wrote a treatise on spherical trigonometry, upon a new plan, and, the following year, composed an algebraical tract on the Julian period. In 1653, he was chosen a fellow of the college of All-Souls. He was one of the earliest members of the philosophical society at Oxford, which was the origin of the royal society, after the institution of which, in 1663, he was elected a fellow, and distinguished himself by his activity in promoting the objects of that institution. In 1657, he was appointed professor of astronomy at Gresham college, but, on being nominated to the Savilian professorship of astronomy at Oxford, resigned the former office, and, in 1661, returned to the university. He received a commission, in 1663, to prepare designs for the restoration of St Paul's cathedral, then one of the most remarkable Gothic edifices in the kingdom. To prepare himself for the execution of this great undertaking, he made a visit to France in 1665, and then finished the designs; but while they were under consideration, the cathedral was destroyed by the fire of 1666, and the plan of repairing it was relinquished. Wren had now an opportunity for signalizing his talents by the erection of an entirely new structure. The contemporaneous destruction of fifty parochial churches and many public buildings, also furnished an ample field for his genius: and he would have had the honour of founding, as it were, a new city, if the design which he laid before the king and parliament could have been adopted; but private interests prevented its acceptance. On the death of Sir John Denham, in 1657, he succeeded to the office of surveyor of the works. He resigned his Savilian professorship in 1673. In 1674, he received the honour of knighthood; and, in the following year, the foundation of the new cathedral was laid. In 1680, he was chosen president of the royal society. In 1683, he was appointed architect, and one of the commissioners of Chelsea college; and, the following year, controller of the works at Windsor castle. He was elected member of parliament for the borough of Plympton, in 1685. To his other public trusts were added, in 1698, those of surveyor general and commissioner for the repair of Westminster abbey, and, in 1699, that of architect of Greenwich hospital. In 1700, he represented in parliament the boroughs of Weymouth and Melcombe Regis. In 1708, he was made one of the commissioners for the erection of fifty new churches, in and near the city of London. After having long been the highest ornament of his profession, he was, in 1718, deprived of the surveyorship of the royal works, from political motives. He was then in the eighty-fifth year of his life, the remainder of which was devoted to scientific pursuits and the study of the Scriptures. He died February 25, 1723. His remains were interred, with the requisite honours, under the choir of St Paul's cathedral; and on his tomb is a monumental inscription. It is as follows:—

*Subtus conditur*
*Hujus Ecclesiæ et Urbis Conditor,*
*Christ. Wren;*
*Qui vixit Annos ultra nonaginta,*
*Non sibi sed Bono publico.*
*Lector, si Monumentum quæris,*
*Circumspice.*

(Beneath is laid the builder of this church and city, who lived above ninety years, not for himself, but for the public good. Reader, if thou seekest his monument, look around.)

The edifices constructed by this architect were principally public, including a royal hunting seat at Winchester, and the modern part of the palace at Hampton Court. Some of the most remarkable of his buildings, besides St Paul's, are the monument on Fish street hill, the theatre at Oxford, the library of Trinity college, Cambridge; the hospitals of Chelsea and Greenwich; the church of St Stephen's, Walbrook; those of St Mary-le-Bow, St Michael, Cornhill, and St Bride, Fleet-street; and the great campanile of Christ-church, Oxford. Of his character as a man of science, we may accept the testimony of Newton, who, in his *Principia*, joins the names of Wren, Wallis, and Huygens, whom he styles *hujus ætatis geometrarum facilè principes* (the greatest geometricians of the age.) As an architect he possessed an inexhaustible fertility of invention, combined with good natural taste and profound knowledge of the principles of his art. His talents were particularly adapted to ecclesiastical architecture; in his palaces and private houses he has sometimes sunk into a heavy monotony, as at Hampton-court and Winchester. The interior of the church of St Stephen's, Walbrook, which has been considered as his *chef-d'œuvre*, exhibits a deviation from common forms equally ingenious and beautiful. The monument is grand and simple; and St Paul's cathedral, notwithstanding the severe criticisms to which it has been subjected, may be fairly reckoned among the most magnificent productions of architectural genius. Sir Christopher Wren's architecture is the perfection of that modern style, which, with forms and modes of construction essentially Gothic, adopts, for the purposes of decoration, the orders and ornaments of classical antiquity.—See *Parentalia, or Memoirs of the Family of the Wrens* (folio, 1750), published by his grandson, and Elmes's *Life of Wren* (4to.,1823).

WREXHAM; a populous and prosperous town in North Wales, in the county of Denbigh, 179 miles north-west of London. It was anciently called Wrightesham, by the Saxons, to whom its foundation is attributed, and from whom the inhabitants are supposed to derive their customs and language. The town consists of some good avenues, the High street, in front of the Wynnstay Arms, and terminated by a spacious town-hall, is the most respectable, and presents at all times a scene of trade, bustle, and animation. The church, the architectural boast of Wales, was erected in the reign of Henry VII., and is an exquisite specimen of the florid Gothic which began to prevail at that period. The tower attains a height of 140 feet, having three of its fronts adorned with whole-length figures occupying niches. The interior is by no means in keeping with the richness and decoration of the tower and sculptures of the outside of the chancel, but contains an ancient monument, inscribed with Saxon characters, and a noble design and work by Roubilliac, to the memory of Mary, daughter of Sir Richard Myddleton, of Chirk Castle. It represents the resurrection of the body in its last sad clothing, and the grave resigning its dead at the citation of the angel on the Day of Judgment. This design has since been repeatedly imitated. Wrexham is the great thoroughfare between Liverpool and Chester, and North Wales. The coaching establishments are numerous, and the travelling in consequence at moderate rates. The great fair, for all sorts of wares, goods, &c. commences on the 23d of March, and continues during one fortnight. It is attended by purchasers, chiefly small shop-keepers, from all parts of North Wales, and business is transacted on this occasion to a considerable extent. The flannel trade is less prosperous here than formerly, but an extensive trade is carried on in coal, iron, and lead, as well as in flour, wire-drawing, and paper-making. Population in 1841, 12,921.

WRIGHT, Joseph, a celebrated English painter, usually styled *Wright of Derby*, was born in that town, in 1734. In 1751, he was placed under Hudson, the most celebrated portrait painter of the day, although of very moderate talents. He then visited Italy, where he made great advances in his profession, and, in 1755, returned to England. Having resided first at Bath, but afterwards at Derby, employed in portrait painting, at a mature age he again visited Italy, and, on his return, in 1782, was elected an associate of the royal academy. His later pictures were chiefly landscapes, which are much admired for elegance of outline and judicious management of light and shade. A large landscape, a View of the Head of Ulleswater, stands at the head of his productions of this class; while, in the historical line, the Dead Soldier is sufficient to stamp him a fine painter. He fell a victim to his unwearied attention to his profession, dying of a decline, in 1797.

WRIGHT, Thomas; a captain in the British navy, whose fate has excited much discussion Having been employed to land the conspirators George Cadoudal, Pichegru, the Polignacs, and others, on the French coast, in the years 1803 and 1804, captain Wright was soon after made prisoner of war; and, on the supposition that his evidence would be useful in procuring the conviction of Pichegru and Cadoudal, he was carried to Paris, and lodged in the Temple. He, however, declared himself ignorant of the plans of the conspirators, asserting that he merely obeyed orders in landing them in France. Reports were spread at the time, and of course believed, that he was put to the torture, by order of Napoleon, to force him to confess, and that Réal and Dubois were the instruments of the emperor in this act. In 1805, his exchange was consented to; but, in November, the *Moniteur* announced that he had been found dead in prison, having cut his own throat from impatience and despair. The enemies of Napoleon, and particularly the British, on the other hand, loudly charged the death of the prisoner to the emperor, who, as it was pretended, had been induced to commit this foul act to prevent a public exposure of the treatment to which captain Wright had been subjected in the Temple. Others have imputed the murder to Savary, Fouché, and Réal, to whom the same motive—a desire of concealing their conduct towards the prisoner—has been imputed. While at St Helena, doctor Warden mentioned the subject to Napoleon, and told him that it was pretty generally believed in England, that he had caused captain Wright to be put to death. "Why should I have committed such an act?" replied the emperor. "Of all men whom I have had in my power, he was the person whom I should have been most de-

sirous to preserve; for, in the trial of the conspirators, which was then going on, Wright was the most important witness, as he had brought the chief conspirator, Pichegru, into the country." Napoleon also declared that Wright perished by his own hand, some time before his death was announced in the *Moniteur;* and Fouché and Savary agreed in this statement. (See *Savary; Otranto, Duke of;* and *Pichegru.*) The trial, however, took place in March, April and May, 1804, and the death of Wright in October, 1805. Savary, in his Memoirs (2 vols., 8vo., London, 1828), has the following remarks on this subject:—"That unfortunate man remained in the Temple till 1805, when he died. So many stories have been told concerning his death, that I, too, was curious to learn the cause of it, when, as minister of police, the sources of information were open to me; and I ascertained that Wright cut his throat in despair, after reading the account of the capitulation of the Austrian general Mack, at Ulm; that is, while the emperor was engaged in the campaign of Austerlitz. Can one, in fact, without alike insulting common sense and glory, admit that this sovereign had attached so much importance to the destruction of a miserable lieutenant of the English navy, as to send, from one of his most glorious fields of battle, the order for his death? It has been added, that it was I who received from him this commission. Now, I never quitted him, for a single day, during the whole campaign, from his departure from Paris till his return. The civil administration of France is in possession of all the papers of the ministry of the police, which must furnish all the information that can be desired respecting that event."

WRINKLES; folds of the skin, occasioned by that organ being too large for the parts it encloses. When, therefore, the parts beneath the skin, in any part of the body, are diminished from any cause, and the skin itself does not shrink in the same proportion, wrinkles are formed. So, when the skin is too much relaxed, or when it is moved very often, the same result is produced. Hence sickness, age, and the indulgence of violent passions, produce wrinkles. Warm bathing, by relaxing the skin, has the same tendency.

WRIST (*carpus*). The part of the arm between the fore-arm and hand is admirably calculated to increase the action, and, consequently, the utility of the hand, by giving it various motions, without which, as any one may easily convince himself, it would be a much less efficient instrument of handling, seizing and conveying objects. It is composed of eight small bones in two rows, the motions of which on the fore-arm may be described as those of flexion, extension, abduction and circumduction. Beasts of prey, which use their fore-paws for seizing their food, are provided with similar instruments of motion in that part; but in those animals, like the horse, &c., in which the fore-feet are merely instruments of locomotion, there is no such machinery for free motion in various directions.

WRIT. A writ is a precept issued by some court or magistrate in the name of the government, the executive branch of the government, or that of the state, or people of the state, intending, in either case, the supreme authority or its representative, addressed to a marshal, sheriff, constable, or other subordinate executive officer, commanding him to do some particular thing. Writs are distinguished into *original* and *judicial*, the former being such as a party sues out without any direction of the court in the particular case; the latter, such as are issued in pursuance of a decree, judgment or order of a court. The different descriptions of writs are too numerous to be specified and described in this article. The term *writ* is, however, not confined to the proceedings in a suit; for there are writs of election, ordering certain officers to be chosen; writs in the nature of a commission, for instance, summoning one to be chief justice (2 Coke's *Ins.* 40), or to take the degree of serjeant at law; so there are writs of protection, issued, for instance, to secure a person from arrest while he is attending as a party in a suit. In England, writs usually issue in the name of the sovereign.

*Writ of Error* is a commission to judges of a superior court, by which they are authorized to examine the record upon which a judgment was given in an inferior court, and, on such examination, to affirm or reverse the same according to law.

WRITERS, OR CLERKS TO THE SIGNET; a numerous society of gentlemen of the law in Scotland, who are chiefly employed in civil trials before the court of session. The clerks to the signet were anciently clerks in the office of the secretary of state, by whom writs passing the royal signet were prepared. When the forms of the judicial procedure in this country were changed, in consequence of the introduction of clerical judges into the administration of justice, and the brieves of the old law, with jury trial, fell into disuse, which it appears gradually to have done for about a century before the institution of the college of justice, the royal signet was open to the writs or summonses ordering attendance on the court, or to the diligence necessary for giving effect to its decrees; and the new writs, which in this manner became requisite, were prepared by the writers to the signet; in consequence of which, their numbers must have considerably increased as the new system of writs extended. At the time of the establishment of the college of justice in 1535, the writers to the signet were in the exercise of the same duties in which they are engaged at the present day; and they are recognised by the act as a constituent part of that college. The duty of the clerks to the signet, or writers to the signet, as they are often called, is to prepare the warrants of all charters of lands flowing from the crown; all summonses for citing parties to appear in the court of session; all diligences of the law for affecting the person or estate of a debtor, or for compelling implement of the decrees of the supreme court. The writers to the signet have farther the privilege of acting as agents or attornies in conducting causes before the court of session. The society is now under the keeper of her Majesty's signet, who acts by a deputy keeper; and the affairs of the body are conducted by this deputy and certain commissioners named from the members, with power to them to make bye-laws for the admission of members and the regulation of their conduct.

By the laws at present in force, it is requisite that a young man, before applying to be taken on indentures by a writer to the signet, should have attended one of the universities two years. Evidence of this must be produced with his petition. The indenture continues for five years; the apprentice-fee is £130 sterling, £20 to the widows fund, and £20 to the library. After the expiration of the indenture, one year must intervene before he can be taken on trial; and he must have attended three classes of law, independently of his previous

attendance for two years. The candidate being admitted to his trials, is first examined on his knowledge of Scotch law by three private examinators; and, at the distance of three months, he is examined in the hall of the society, by the public examinators, in presence of the commissioners, on his knowledge in conveyancing. The dues of his admission are about £77, with some trifling perquisites to the officers and gown-keepers, besides stamps on the indenture and commission. The system of education, the time necessarily occupied in it, and the expence with which it is attended, are well calculated to secure respectable and well informed members.

WRITING; the art of expressing, by visible signs or characters described on some material, thoughts, feelings, or musical tones. With modern civilized nations, it signifies more especially the art of representing by certain characters the tones of which our speech consists; that is, of representing ideas by phonetic signs. Metaphorically, it is applied to style and composition, as the instrument of conveyance is often taken for the thing conveyed. Writing, if required by law for certain purposes, means now, in most countries, the expression of ideas by pen and ink, pencil writing being generally considered invalid. The art of writing, especially when reduced to simple phonetic alphabets like ours, has, perhaps, done more than any other invention for the improvement of the human race. It may, like other great blessings, have been attended with some evils; but it has been the most efficient means of raising mankind from barbarism to civilization. Without its aid the experience of each generation would have been almost entirely lost to succeeding ages, and only a faint glimmer of truth could have been discerned through the mists of tradition. For this reason, and because, in the earliest ages, almost all knowledge is concentrated in the caste of priests, it is easily explainable that the art of writing is considered, in the earliest periods of history, as something sacred, and believed to have been brought by the gods to men, or to have proceeded from immediate inspiration, as in the case of the Greek Cadmus. If the art of tilling the ground was deemed so great a blessing that the gods were represented as having taught it to men, how much more must mankind have been inclined to refer the art of writing—the great source of civilization—to the same origin, after the slow process of its developement had been forgotten! We have spoken of the probable mode of its developement in the article *Hieroglyphics*, and will only add here a few remarks, which were promised in that article.

The picture-writing of Mexico, discovered when that country was conquered by the Spaniards, is one of the most interesting monuments of the progress of civilization, and the developement of the human mind. Spineto, in his Lectures on the Elements of Hieroglyphics and Egyptian Antiquities, describes a specimen of Mexican hieroglyphics, which he saw in the library of the Escurial, and which was imported to Europe by a Mexican, who translated it into Spanish. The title of the book is, History of the Empire of Mexico, with Notes and Explanations. An account of it, taken from Lecture vii, is here subjoined:—"The translation is divided into three parts. The first is a history of the Mexican empire, containing the biography and conquests of not less than eleven kings: the second is a regular roll of the several taxes which each conquered province or town paid to the royal treasury; and the third, a digest of their civil law, the largest branch of which was of their common law, or *jus patrium*. In each of these pictures every king is represented by different characteristics: the length of his reign is marked by squares round the margin, which, when the reign happens to be extremely long, fill the four sides of the picture. In each square there is a small circle to signify the year—a mark which they repeat according to its number till they reach thirteen, after which they begin over again to count one; and under these small circles there is a kind of hieroglyphic figure, which is repeated in every fourth square. In all the pictures that exhibit the reign of each king, there is a figure which shows the nature of his government, and, therefore, varies according to the circumstances and the events that took place during his reign. In this picture it is a shield or a target, crossed by four lances, which means that this king subdued, by force of arms, four towns or people. They are expressed by four rough drawings of a house, to which a symbol, or hieroglyphic figure, denoting the name of each, has been attached. In the first, we have a tree; in the second, another tree of a different sort; in the third, a kind of basket; in the fourth, a sort of box, with two baskets. These exhibitions I am unable to explain; but they, no doubt, were perfectly intelligible to the people, and perhaps might have had a reference to the natural productions of the subdued provinces. To mark the beginning of the reign, and the different epochs in which a king performed any of the actions mentioned in the picture, or even his death, they painted the figure of the king, with his characteristic emblem, which denotes his name, opposite to the year in which the event had taken place. Thus, in this picture, the king's name is said to be Acamapichtli, and his figure is repeated twice; opposite, the first square, which marks the beginning of his reign, and opposite, the eighth square, which shows that in the eighth year of his reign he put to death the chiefs of the four towns he had conquered. This circumstance is expressed by four heads placed before him, distinguished by the same hieroglyphical characters which mark the towns or provinces over which they reigned. Across the figure of the king there is a kind of sash, with a knot on his shoulder, which, by its length and breadth, means the number of wives and children he had. In the present instance, it seems not to be deficient in either of these dimensions. I am told that there is another mark to express the quality and number of children, whether male or female; but, to confess my ignorance, I could never discover it, although I have observed all the pictures of the several reigns recorded by this curious piece of history, with all possible attention. To the picture of each reign a second picture was invariably attached, which indicated the other actions of the sovereign as a politician, and the other events that had distinguished his government. The whole account given by Purchas is curious and highly amusing. In recording the tribute or taxes which each town had to pay, as it was paid in kind, it seems that the Mexicans had adopted the plan of drawing the figure of the object. Thus to represent a basket of cacao-meal, or of any other sort of corn, they drew the figure of a basket containing the ears of corn, or the meal extracted from the fruit of that tree or plant. To represent suits of military clothing, armour, or shields, they exhibited their respective figures: the different sorts of mantles, whether of feathers or of

other materials, were signified by their respective figures, differently coloured. The number of each article was expressed either by circles, each of which signified ten, or by a kind of pine-apple, which meant five, painted at the top of the basket, or by the side of each individual article; and if their quantity was so great as to amount to a burthen, or a load, this was expressed by another mark, which had the same signification. The like must be said of their paper, their cups, pots of honey, cochineal, wood, planks, beams, timber, loaves of salt, hatchets, lumps of copal, refined and unrefined, shells, wool, stones, canes to make darts, eagles, skins of animals; in short, of every thing which each town had to pay for the maintenance of the state. It would be impossible for me to give a minute account of their civil and religious institutions, which form the third, and by far the largest department, in this most extraordinary picture. Every trade, every office, every employment, is differently delineated. The rites attending the several ceremonies of burial, marriage, and baptism (for they certainly had some sort of baptism), are minutely set down. But, above all, it seems that the education of children, from their infancy to manhood, had attracted the greatest attention of their legislature. The quantity of food, the quality of labour, the different pursuits attached to each distinct age, the various punishments decreed for the different faults, are stated with a precision and clearness which is quite astonishing. The age of the child can always be made out from the number of circles placed above its head; the figure of the mother, and indeed of any woman, by her kneeling posture, and sitting on her legs; while the figure of the father, the priest, the teacher, and, indeed, of all men, besides the different attributes which designate the employment, is always represented either standing or sitting on a low stool, with his knees to his breast." Spineto here introduces, as a specimen, a table, which represents all the following ceremonies of a marriage. "This [the marriage] was generally brought about by an old woman, whom they call *Amantesa* (that is, a marriage broker), who was to carry the bride on her back to the house of the bridegroom, at the beginning of the night, accompanied by four women bearing torches of pine-tree. When arrived at the house, the bride and the bridegroom were seated near to the fire on a mat, the woman, as usual, sitting on her legs, the man on a stool. There they were tied together by the corner of their garments; after which they offered to their gods a perfume of copal, two old women and two old men being present as witnesses. This ceremony over, they were allowed to dine upon two different sorts of meat, and some pulse. Thus, not only the dishes to be used were marked, but also the cup out of which they were to drink. The witnesses were allowed to dine after the newly-married couple, which circumstance is expressed by their being seated at the four corners of the mat, which served for a dining-table. The sign which is added to the mouth of these four witnesses signifies that, before they retired, they had the right to give, and, in fact, they gave, to the married folks good counsel how to behave themselves, that they might live in peace and happiness. The position of one of the women, holding up her right hand, means that the portly matron is already making use of the privilege allowed to give a little exercise to her tongue; while the folded arms of the remaining witnesses prove that they are waiting for their turn. In the punishment of their children, the Mexicans seem to have been ingeniously cruel. Most of the chastisements I find marked down, consist in unmerciful castigations; in driving into the hands, and arms, and legs, and into the body of the culprit, thorns and prickles. Sometimes they singed his head with fire; at other times they tied him down to a board, and threw him into a bog; and occasionally they held the head and nose of the unfortunate child upon the smoke of a particular wood, which they called *axi*. The crimes for which they inflicted punishments so severe and so cruel are the same with those which are condemned by the laws of the most civilized nations of Europe, and cannot but inspire us with a very favourable, nay, exalted opinion of the moral notions of the Mexicans. They seem even to have gone beyond us for the sake of preserving proper habits of industry and morality among the people; for they not only punished drunkenness with death, but also idleness; for if drunkenness, said they, renders a man capable of committing a crime, idleness exposes him to drinking and to bad company. This law, however, lost its power with men and women as soon as they reached the age of seventy: they were then allowed to pass their lives in idleness, and to get drunk, both in public and in private. The reason assigned for this extraordinary regulation is, that, as they could no longer work, and had but a short time to live, the law indulged them with the enjoyment of what seems to have been considered by the Mexicans, as one of the greatest pleasures of life. Such is the short account that I can give of this most singular mode of expressing ideas by pictures, which is, I think, an exemplification of the first mode of writing by hieroglyphics. It is, besides, one of the most interesting monuments by which we can arrive at the knowledge of the history of Mexico; for it is evident, that from the wisdom of their regulations; from the quantity of taxes, which, as is recorded in these pictures, were levied upon the different towns and nations; from the minuteness of the details; and from the pictures themselves, which show some knowledge of perspective and drawing,—the Mexicans had made no inconsiderable progress in knowledge, in civilization, and in the cultivation of the arts." To this, professor Stuart adds the following observations in his son's (Mr Isaac Stuart) translation of Greppo's Essay on the Hieroglyphic System, &c. (1830). "The whole of the above symbols much more resemble the anaglyphs of the Egyptians than they do the common hieroglyphics, figurative or tropical. That they are totally diverse from phonetic hieroglyphics, need not be said. The combination of so many symbols, some of which have no resemblance, but a merely conventional or imaginary one, is a trait altogether of a nature similar to the predominating quality of the anaglyphs. There is some special interest attached to the subject now before us. In connection with what has been before said, it shows that three of the most distinguished nations of three different continents, namely, the Chinese in Asia, the Egyptians in Africa, and the Mexicans in America, have all hit on the like expedients, to transmit their ideas to posterity. In all these facts, too, we may see the infancy of alphabetic writing, the germ from which this tree sprung, whose leaves are for the healing of the nations."

We have pointed out in the article *Hieroglyphics*, the mode in which the important step was made

from picture-writing to a phonetic alphabet. We would refer the reader, for further information upon this interesting subject, to the eighth and ninth lectures of the above mentioned work of the marquis Spineto; to which we will add here the remark of professor Stuart, in the translation of Greppo by his son, already cited. He says, "There are some striking resemblances between the Chinese signs employed in writing and the Egyptian hieroglyphics; so striking that some have been led to suppose that one of these nations must be a colony of the other. It is now well known that the original written characters of the Chinese were imitative or figurative, and that they were few in number. These have, in process of time, been modified and changed, both as to form and use, so that scarcely a vestige now remains of their original appearance, and, in some cases, of original usage. All the Chinese writing was originally idcographic; that is, it resembled the figurative and tropical hieroglyphic method of the Egyptians. But now, as stated by that excellent Chinese scholar, Abel Remusat, in his Chinese Grammar, p. 4, at least one-half of the Chinese characters are merely phonetic, or alphabetic, in the sense of syllabic. These the Chinese call *hing-ching*, that is, representing sound. In the next place, the Chinese have an order of characters which they name *hoeï-i* and *kia-tsieï*, which are designed to express abstract and intellectual ideas. These resemble, of course (not in form, but as to use), the tropical hieroglyphics of the Egyptians. But, on the other hand, there are some striking differences between the hieroglyphic system of writing and that of the Chinese. The Chinese characters are divided into primitive, or simple, and derived, or composite. Of the first, called *siang-hing*, which make the elements of all their writing, there are only about 200 (Remusat's *Grammar*, p. 1, note 2), while the Egyptian hieroglyphics amount to more than 800 (*Précis*, p. 267). The derived or composite characters of the Chinese are exceedingly numerous; and in these are combined two or more simple characters. The combination oftentimes is very complex, and not a little difficult for a learner to decipher. These are called *hoeï-i*. On the contrary, in Egyptian, the combination of proper hieroglyphics is very rare; indeed, it scarcely ever takes place, and when it does, it is in such a way that the elements of the combination are preserved entirely separate; as, for example, in the anaglyphs above described. These striking points of difference serve to show that although the figurative hieroglyphics of the Egyptians, and the *siang-hing*, or original simple characters of the Chinese, were alike (for such must be the case, inasmuch as both were pictures, or imitations of sensible objects), yet, in the course which the two nations respectively chose, in order to represent abstract and intellectual ideas, there was a great diversity; hence the tropical characters of the Chinese, compounded of the simple ones, and diversified to an almost endless extent, are very different from the tropical characters of the Egyptians, which continued to be simple in their structure, and, in general, incapable of combination. That light may yet be cast on the invention of proper alphabetic signs, from a diligent and extensive collation of Egyptian and Chinese characters, and a better understanding of the true nature and history of each, every lover of literature will continue to wish and to hope."

To illustrate another very important step in writing, that of expressing grammatical forms by hieroglyphics, alluded to in the article *Hieroglyphics*, we extract the following passage from the fifth Lecture in Spineto's work: "The marks of the genders are, a square, either plain or striated, for the masculine, and half a circle for the feminine. The plural is almost invariably expressed by a simple repetition of the [hieroglyphical] units: to these units sometimes is added a quail: all of these stand for the syllable *noue*, or *oue*, which is the termination added to the plural: for instance, the word *soten* signifies *king*; and, by the addition of *noue*, we have *so-tenoue* (kings); *noyte* (god), *noytenoue* (gods); and the like. In regard to the genders, it seems the Egyptians also expressed them by employing the pronouns *of him*, *of her*; and these pronouns were represented by the figure of an undulating line over a serpent, or over a broken line. In the first instance, the group represented the pronoun *his*, or *of him*, which, in Coptic, was *nev*, or *nef*; in the second instance, the group stood for the pronoun *hers*, or *of her*, which, in Coptic, was called *nes*." These terminations, or an abbreviation of them, if added to hieroglyphic expressions, would make them either of the masculine or feminine gender: "For example, the *chenalopex*, that is, the *goose*, or the *egg*, are the phonetic hieroglyphics expressing the word *child*; for both of them represent the letter *s*, which is an abbreviation of the word *se*, or *tse* (son, child): therefore if to the bird or to the egg we add the figure of the serpent, or the broken line, we shall have, in the first instance, the group signifying *son of him*, or *his son*; and, in the second, *son of her*, or *her son*. The genitive case is expressed mostly by an undulating line added to a group. This hieroglyphic stands for the letter *n*, and, on those occasions, is taken as an abbreviation of the syllable *nen*, which is the invariable termination of the genitive case in the Coptic language. The Egyptians distinguished the third person singular of the present tense in the same way as we do in the English language, by adding the letter *s* to the word, such as *he does*, *he writes*. The figure of the serpent, which stands for the letter *s*, is a mark of the third person singular of the present tense." Champollion has found a number of other hieroglyphics, which exhibit the inflections of verbs; but they are not yet all accurately determined. "The passive participle was represented by two hieroglyphics, the horn and the half circle. The pronoun *this* was exhibited by a vase and a perpendicular line. The pronoun *who* or *which* was represented by a vase and half a circle. Such are some of the principal and most important grammatical forms or phrases." It may be made a question whether phonetic alphabets are all derived from a common source, or whether different nations, in the gradual progress of improvement, were led to this great invention without mutual communication. If the latter supposition be correct, the similarity of these alphabets in the oldest languages would be owing to the similarity in the minds of men, and in the processes of their developement; but in either case, after phonetic characters were invented, they would naturally assume a great variety of forms, being merely arbitrary signs. Such we find to be the fact. A considerable number of ancient alphabets still exist, such as the demotic, hieratic and hieroglyphic characters of the Egyptians, the old Phœnician, Punic, Etruscan, Greek, Runic, Cuffic, arrowhead characters, and a number of others. The last are also called

by some the *wedge characters*, because the lines of which they consist are so put together as to have a wedge-like form. This species of writing is found upon some ancient monuments of Persia and Babylonia. The arrow-head characters may be divided into two principal classes, the Persian and Babylonian, or the Median and Chaldean, of which the former has again three, the latter two subdivisions. The Persian arrow-head characters are found in the ruins of Pasargadæ and Persepolis, in the valley of Murgab near Fasa in Persia, in the ruins of Susa and Babylon; and, in most of these cases, inscriptions in all three characters stand word for word one under the other. The Babylonian arrow-head character, however, never appears, except alone, on the various kinds of tiles and other bricks and stones in the ancient Babylon; also on gems and cylindrical amulets. All these sorts of inscriptions are read horizontally from left to right, are phonetic, and comprise some characters for parts of words and monograms. As yet the various attempts to decipher these inscriptions have proved unsuccessful. —See *The Assyrian Wedge-Character explained*, &c., edited by Dorow (Wisbaden, 1820, in German).

Not only the character of the various alphabets differ, but also the order in which the characters are connected, or, which is the same thing, the way in which the writing is to be read. The most ancient ways of writing include, 1. Cionædon, or column writing, in which the letters and words stand one under the other, as is the case with the Chinese writing, and with the Egyptian hieroglyphics; 2. the Boustrophedon, or furrow writing, which proceeds, like the furrows of the plough, alternately from right to left, and from left to right; 3. Sphærædon, or circular writing.

It is highly probable that the Greeks received the art of writing from Egypt, either directly or through the Phœnicians. The Greeks say that Cadmus brought them the first alphabet, consisting of sixteen letters, according to Pliny the following:—Α, Β, Γ, Δ, Ε, Ι, Λ, Μ, Ν, Ο, Π, Ρ, Σ, Τ, Υ. To these Palamedes added Θ, Ξ, Φ, Χ; and Simonides again added Ζ, Η, Ψ, Ω. It ought to be observed that the Samaritan letters did not differ from the Greek. Originally the Romans wrote only with uncial characters. In the ancient manuscripts found at Herculaneum, and especially in the Greek manuscripts, all the words are written in uncial characters, and are neither separated by points nor spaces. There is nothing to indicate the division of the words. No sign is met with, which might assist in the pronunciation. The signs of punctuation did not begin to be used until the knowledge of the Greek language was lost. See Winckelmann's *Letters on Herculaneum*.

With the conquests of Rome, the art of writing, and particularly the Roman alphabet, were more and more widely spread; but great difficulties were found to attend the attempts to write down the languages of particular countries with characters adapted to another language; i. e. to other sounds. Such attempts were not often made by the Romans; but when the missionaries spread themselves through the countries of Europe, and found it necessary to give instruction in writing, as well as to prepare translations of the Gospels into the various idioms, we meet every where with complaints of the difficulty, and sometimes the impossibility, of rendering the native sounds by the already existing alphabet. The reason is clear. In some instances, the sounds may have been so rude, and so little different from the cries of animals (as is sometimes the case with the language of savages), that they could not be expressed by signs for articulate sounds; sometimes the tones were totally different from those for which the alphabet had been made. This circumstance has produced a great effect on the orthography of these languages, and, in our opinion, in various cases on the languages themselves. Certain differences between sounds have been lost in consequence of the want of characters to designate them, as appears from a variety of facts. The same complaints, which were made in the first centuries of Christianity, respecting the difficulty of ascertaining the true sound of the native words in some instances, and of writing them with Latin characters, are now made by the missionaries in the South sea islands, &c. And if it was difficult to adapt the Latin alphabet to foreign idioms, how much more difficult must it be to adapt the English orthography—certainly the most preposterous existing—to different classes of languages! It was therefore a very useful undertaking of Mr John Pickering to prepare an alphabet fitted to convey all the sounds which commonly occur in the various languages. This alphabet has been adopted by the war department of the United States of America, for the writing of the Indian languages, and by the missionaries of the South sea islands. It is given at the end of this article.

Respecting the alphabets used at various times in Great Britain, Mr Astle observes that, after the most diligent inquiry it doth not appear that the Britons had the use of letters before their intercourse with the Romans: and though, from the coming of Julius Cæsar till the time when the Romans left the island, in the year 427, the Roman letters were familiar to the eyes of the inhabitants, he is of opinion, that writing was very little practised by the Britons till after the coming of St Augustine, about the year 596. The writing which prevailed in England from this time to the middle of the eleventh century, is generally termed *Saxon*, and may be divided into five kinds, viz. the Roman Saxon, which is very similar to the Roman, and prevailed in England from the coming of St Augustine till the eighth century; the set Saxon, which took place towards the middle of the eighth century, continued till about the middle of the ninth, and was not entirely disused till the beginning of the tenth century; the running-hand Saxon, which came into use towards the latter end of the ninth century, when learning was diffused in England under the auspices of king Alfred, in whose reign many books were written in that island in a more expeditious manner than formerly; the mixed Saxon, occurring in the ninth, tenth, and in the beginning of the eleventh centuries, in many manuscripts which were written in England in characters partly Roman, partly Lombardic, and partly Saxon, and the elegant Saxon, which took place in England early in the tenth century, lasted to the Norman conquest, but was not entirely disused till the middle of the twelfth, and is more beautiful than the writing in France, Italy, and Germany during the same period. The writing introduced into England by William I. is usually called *Norman*, and is composed of letters nearly Lombardic, which were generally used in grants, charters, public instruments and law proceedings, with very little variation, from the Norman conquest till the reign of king Edward III. About the reign of king Richard II., variations took place

in writing records and law proceedings. The characters from the reign of king Richard II. to that of king Henry VIII., were composed partly of characters called *set chancery* and *common chancery*, and some of the letters called *court-hand*; which three different species of writing were derived partly from the Norman, and partly from the modern Gothic. The modern Gothic began to take place in England in the twelfth century; the old English about the middle of the fourteenth century; and set chancery and common chancery in the decline of the same century, and are still used in the enrolments of letters patent, charters, &c., and in exemplifications of recoveries; the court-hand was contrived by the English lawyers, and took its rise about the middle of the sixteenth century, and continued till the beginning of the reign of George II. when it was abolished by law. The court-hand characters were nothing more than the Norman characters very much corrupted and deformed. In the sixteenth century, the English lawyers engrossed their conveyances and legal instruments in characters called *secretary*, which are still in use. The French call their writings by the names of the different races of their kings, in whose times they were written; these were, the Merovingian, the Carlovingian, the Capetian, the Valesian, and the Bourbon.

The manuscripts written in the northern parts of Scotland and in Ireland are in characters similar to the Saxon. It seems probable that the interior parts of Europe were immediately peopled from the northern parts of Asia, and the maritime parts from Phœnicia, and the southern and western parts of that quarter of the globe. If this be the case, it is not surprising that some Eastern customs prevailed in Great Britain and Ireland, and that many Celtic words are still preserved both in the Irish and in the Welsh languages. The Norman characters, it is observed, were generally used in England from the coming of William I.; and the Saxon characters were entirely disused in the very beginning of the twelfth century; but the Irish and Scots preserved the ancient forms of their characters till the end of the sixteenth century. The Gaelic or Erse language, used in the Highlands of Scotland, and the Hiberno-Gaelic, are nearly the same; and their letters are similar to each other; as Mr Astle has shown by various specimens. The curious will find much information on the subject of this article in Astle's Origin and Progress of Writing (4to., 1784).

The German alphabet was formed by Kero and Ottfried, in the time of Charlemagne. German was first written with Latin letters. In fact, most writings of that time, as forms of laws, treaties, &c., were even drawn up in the Latin language. The thirteenth century is generally considered as the time when German characters became common, under the emperor Frederic II. Others assume a later period. Germany has, as Mr Breitkoph observes, but two national alphabets, the (so called) *fractur* and the *current*. Fractur characters were formed out of the (so called) new-Gothic and monastic characters, which sprung up in the eleventh century. It was not till the fifteenth century, that the current or cursive characters were used in printing. Before that time, straight characters only had been used in printing: but the elder Aldus Manutius made types for the cursive character. Albert Dürer at last settled the proportions for the German characters. In diplomatics the knowledge of the letters used at different periods is very important. They have been classified, &c.—See *La Nouvelle Diplomatique;* also Weber's *Essay towards a History of the Art of Writing* (in German, Göttingen, 1807). We have said above, that the alphabets of Europe, and, in fact, most, perhaps all, alphabets now existing, are phonetic (see the article *China*, division *Chinese Language, Writing*, &c.); and it is interesting to know what articulate sounds are used to express the thoughts and feelings of man. We have touched upon this subject in the article *Voice*, and add here a synoptic table of the English elementary sounds as they really exist in the English language, however they may be written. This table is taken from the article *Sound*, written by Sir John Herschel for the *Encyclopædia Metropolitana*. The syllables which contain the sounds referred to, are printed in italics, where words of more than one syllable are introduced.

1. { – Rook; Julius; Rude; Poor; Womb; Wound; *Ouvrir* (Fr.)
   { ◡ Good; Cushion; Cuckoo; Rund (Germ.); Gusto (Ital.)
2. Spurt; *Assert;* Dirt; *Virtue*; Dove; *Double*; Blood.
3. Hole; Toad.
4. { – All; Caught; *Organ*; Sought; Broth; Broad.
   { ◡ Hot; *Comical*; *Kommen* (Germ.).
5. Hard; *Braten* (Germ.); *Charlatan* (Fr.).
6. Laugh; *Task.*
7. Lamb; Fan; That.
8. Hang; Bang; Twang.
9. Hare; Hair; Heir; Were; Pear; *Hier* (Fr.); *Lehren* (Germ.).
10. Lame; Tame; Crane; Faint; *Layman*; Meme (Fr.); *Städchen* (Germ.).
11. *Lemon*; Dead; Said; *Any*; *Every*; Friend; *Besser* (Germ.); *Eloigner* (Fr.).
12. *Liver*; *Diminish*; Persevere; Believe.
13. Peep; *Leave*; Believe; *Sieben* (Germ.); *Coquille* (Fr.).
14. s; *sibilus*; cipher; the last vowel and the first consonant.

*True Diphthongs.*

1. Life; The Sounds No. 5 and No. 13, slurred as rapidly as possible, produce our English *i*, which is a real diphthong.
2. Brow; Plough; *Laufen* (Germ.). The vowel Sound No. 5 quickly followed by No. 1.
3. Oil; *Käuen* (Germ.); No. 4 succeeded by No. 13.
4. *Rebuke;* Yew; You; No. 13 succeeded by No. 1.
5. Yoke; No. 13 succeeded by No. 3.
6. *Young*; *Yearn*; *Hear*; *Here*; No. 13 succeeded by No. 2, more or less rapidly.

The consonants present equal confusion. They may be generally arranged in three classes: sharp sounds, flat ones, and indifferent or neutral; the former two having a constant relationship or parallelism to each other, thus:

Sharp Consonants. S. *sell, cell;* ⍺ (as we will here denote it) *shame, sure, schirm* (Germ.); ⍺. thing; F. *fright, enough, phantom;* K. *king, coin, quiver;* T. *talk;* P. *papa.*

Flat Consonants. Z. *zenith, casement;* ⊏ *pleasure, jardin* (French); ⊟. the *th* in the words *the, that, thou*, V. *vile;* G. good; D. *duke;* B. *babe.*

Neutral Consonants. L. *lily;* M. *mamma;* N. *Nanny;* ⍺. hang; to which we may add the nasal N in *gnu, Ætna, Dnieper*, which, however, is not properly an English sound; R. *rattle;* H. *hard.*

Compound Consonants. C, or T⍺. *church, cicerone* (Ital.), and its corresponding flat sound J or D. ⍺. *jest, gender*: X. *extreme*, Xer*xes;* ⍺. exasperate, *exalt*, Xerxes; &c. &c.

We have here a scale of thirteen simple vowels and twenty-one simple consonants,—thirty-three in all,—which are the fewest letters with which it is possible to write English. But, on the other hand, with the addition of two or three more vowels, and as many consonants, making about forty characters in all, every known language might probably be effectually reduced to writing, so as to preserve an exact correspondence between the writing and pronunciation. In addition to this table, the note which Mr Pickering, of Boston, in America, added to his proposed alphabet, which, as we have stated, is now adopted in some cases, is of great interest,

as showing how the vowel sounds run into one another—a subject which we have had occasion to touch upon in the various articles relating to the vowels in this work. It is to be found, together with his alphabet, in the fourth volume of the Memoirs of the American Academy (Cambridge, 1818), and is given below.* The alphabet itself is as follows:

*Table of the Alphabet.*

A as in the English words *far, father,* &c. (But see the note on the vowels.)
B as in English, French, &c.
D (*the same*).
E as in the English word *there;* and also short *e*, as in *met*, &c.
F as in English, &c.
G English *g* hard, as in *game, gone,* &c.
H an inspiration as in English, &c.
I as in *marine, machine* (or English *ee*); and also short *i* in *him.*
K as in English.
L (*the same*).
M (*the same*).
N (*the same*).
O English long *o*, as in *robe;* and also the *o* in *some, among, above,* &c., which is equivalent to the English short *u* in *rub, tun,* &c.
P as in English, &c.
R (*the same*).
S as in English at the beginning of a word.
T as in English, &c.
U English *oo*, both long and short; French *ou.*
V English *v*. German *w*. Russian *b*, modern Greek *β*.
W as in English; French *ou.*
Y as in the English words *yet, you,* &c.
Z as in the English, &c.

*Nasals*

A as in *ang* (sounding the *a* itself as in *father*).
ˢ
E *long*, as in *eyng* (pronouncing the *ey*, as in *they*); and *short*, as in the word *ginseng;* Portuguese *im* final.
ˢ
I *long*, as in *eeng;* and *short*, as in *ing;* Portuguese *im* final.
ˢ
O *long*, as in *owng* (sounding the *ow* as in *own*); French *on;* Portuguese *om* final. This character will also be used for *o* short *nasalized*, which is very nearly the same with *ong* in *among*, as this latter is equivalent to *ung* in *lung*, &c. See Walker's *Dict., Principles*, No. 165.
ˢ
U as in *oong;* Portuguese *um* final.
ˢ

To these should be added a character for the nasal *awng* or *ong*, which corresponds to our *o* in *for, nor,* &c. And as I have proposed to denote this vocal sound when not *nasalized*, by *aw* so it would be most strictly conformable to my plan, to denote the same vocal sound, when it is *nasalized*, by *aw* or *aw*. But perhaps the letter *a* itself, with the cedilla (*a*), may be used without inconvenience for this broad nasal sound; and we may still, in the common vowels, reserve the simple *a* to denote the sound it has in the word *father*, and not the sound of *aw*. For it may be found, that the first nasal sound in this table is not common in the Indian languages; in which case it would be best to use the simple *a* for the broad nasal here mentioned.

*Diphthongs.*

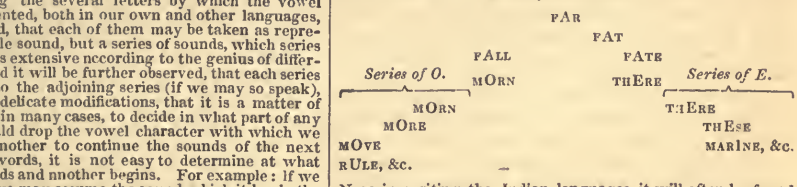
AI English *i* in *pins.*
AU English *ow* in *how, now,* &c., and *ou* in *our.*
IU English *u* in *pure;* French *iou.*
YU to be used at the beginning, as *iu* may be in the middle of words.

*Additional Consonants.*

DJ, DSH, or DZH, English *j* and *dg*, in *judge;* French *dg.*
DH..... as in the English words *this, that;* the ð of the modern Greeks.

* In considering the several letters by which the vowel sounds are represented, both in our own and other languages, it will be perceived, that each of them may be taken as representing, not a single sound, but a series of sounds, which series will be more or less extensive according to the genius of different languages; and it will be further observed, that each series gradually runs into the adjoining series (if we may so speak), by such slight and delicate modifications, that it is a matter of no small difficulty, in many cases, to decide in what part of any one series we should drop the vowel character with which we begin, and take another to continue the sounds of the next series: in other words, it is not easy to determine at what point one series ends and another begins. For example: If we take the letter *a*, we may assume the sound which it has in the word *father*, as the middle point of a series, the whole of which (beginning with the broad *a* in *fall*, and ending with the narrow or slender *a* in *fate*) we denote in English by this one character, thus:—FALL—FAR—FAT—FATE; and these are all the sounds in this series, which philologists designate in our own language by this one letter. But if we extend our view to other languages, we shall find various intermediate sounds between the two extremes of this same series; for example, between the sounds of our *a* in *fall* and in *far*, we find in the French language the *à* in *pâle, mâle,* &c., which can only be described, on paper, as a sound between our two, and which is seldom attended to by foreigners in speaking French. Now, if we should minutely examine a number of languages, and should endeavour to arrange accurately, in one progression, all the vowel sounds belonging to this series, we should doubtless discover in those languages many other slight modifications intervening between the different members of our English series. As, however, we cannot accustom our ears familiarly to distinguish nor our organs of speech to utter with precision, all these slightly-differing sounds, so we need no distinctive characters to represent them to the eye; but it will be sufficient in practice to have characters for the principal sounds (as we may call them) in each series, just as, in the prismatic series of colours, we content ourselves with a few names to denote one principal shade of each colour, without fruitlessly attempting to devise terms of theoretical nicety, to describe the innumerable shades on either side of the principal one from which we set out. If we now recur for a moment to the series above denoted by *A*, we find on one side of it a series which we denote by the letter *O*, and, on the other side, a series which we denote by the letter *E*. In the former we begin with the sound of *o* in *morn*, which might be written with *au* or *aw* (or with *a* alone, if we had been accustomed to write this word with that letter, as we do the word *war*), and then we proceed to the sound which it has in *more*, till we arrive at that which it has in *move;* which point may be considered, practically speaking, as forming the end of one series and the beginning of another, which is represented by the letter *U;* and these two contiguous extremes are sometimes represented by *o* and sometimes by *u;* that is, our *oo*. If we now take the other side of the series, represented as above by *A*, and set out from the sound which that letter has in the word *fate*, we enter upon a series, of which the letter *E* may be called the representative, beginning with its sound in the word *met*, which is the short sound of *a* in *fate;* and this series, proceeding imperceptibly through various gradations, at length vanishes in the simple, unequivocal sound of *ee*, which foreign nations denote by the third vowel, *i*. The following table will perhaps make these remarks more intelligible:

*Series of the Letter A.*




Now, in writing the Indian languages, it will often be found extremely difficult to decide, in each series of the vowel sounds, to what extent, on each side of the principal or middle point (as I have called it), we shall use the same vowel character, or when we shall have recourse to the letter which is the representative of the next adjacent series. From these considerations in the case of the vowel *A*, though we have no difficulty in using it to denote the sound of *a* in *far*, yet, when we proceed in the series to the full, broad sound which it has in *fall*, we feel a repugnance (arising from old habits in our own language) to denoting that sound by the single vowel, and are rather inclined to express it by *au* or *aw*. If it should be thought that it might be denoted by *o* (as in *for*), it will be obvious that this would only be throwing the same difficulty into another series, and we should then have to decide again, how far the letter *o* shall be employed in that series, on each side of its principal sound of *o* in *more*. Now this broad sound (*aw*), though found in the European languages, is not commonly represented in them by the letter *A;* and, therefore, foreigners who should attempt to read any Indian language, in which the simple *a* was employed to denote the sound *aw*, would inevitably be misled, and pronounce the *a* in *father*. It has, therefore, seemed to me better, in an alphabet designed for general use, to employ *aw* to denote this broad sound, and to reserve the single letter *a* to denote its common foreign sound, as in *father*. I should use *aw*, and not *au*, because the latter has already the established power of a diphthong in the foreign languages, equivalent to our diphthong *ow* in *now, how,* &c., but *aw*, being a combination not in common use, would attract the attention of the foreign reader as a new character, and would not lead him into error. Mr Du Ponceau, after much reflection, prefers using *a* alone for the sound of *aw*, and then denoting the sound of *a* in *father* by the diphthong *æ*. His opinion much diminishes the confidence I have had in my own; but as my plan was founded upon the idea of taking the common European sounds of the vowels as the basis of the alphabet, I have thought it would be too great a departure from it, if I should give to the vowel *a* any other than such common sound.

DS, DZ; TS, TZ,.. English *ts* in the proper name *Betsy*; German and Italian *z*; German *c* before the vowels *e* and *i*; Polish *c* before all the vowels; Russian *Tsi*. These four compounds being nearly alike (as Mr Du Ponceau justly observes to me), the ear of the writer must direct him which to use, as the respective consonants predominate.
GH..... See *kh* below.
GZ, or GS, English *x* in *example, exact.*
HW, English *wh* in *what, when.*
KH, guttural, like the Greek *χ*; Spanish *x*, *g*, and *j*; German *ch*; Dutch *gh*. I have given the preference to *kh* for the purpose of expressing this guttural sound; but *gh*, pronounced as the Irish do in their name *Droghed-a*, &c., may be better in certain cases where this guttural partakes more of the flat sound, *g*, than of the sharp one *k*. It may be observed, that *gh* has been already used in some of the books printed for the use of the Indians.
KS English *x* in *maxim, exercise.*
KSH, ——*xi* in *complexion; xu* in *luxury*. The formation of this combination would be obvious; but as the sound is actually often used in the Delaware language, I have thought it best to notice it.
KW, English *qu.*
LY, or LI, .....as in the English word *steelyard;* French *l mouillée;* Spanish *ll;* Portuguese *lh;* Italian *gl* before *i.*
NY, or NI, .....as in the English proper name *Bunyan*, and the words *onion, opinion*, &c.
TH.. .....in the English word *thin;* Greek *θ*.
TS, } .....See *ds* above
TZ, }
TSH,.....English *ch* in *chair;* Spanish *ch* in *much;* Italian *c* before *e* and *i*; German *tsch;* Russian *ч.*
WT, .....as in the Delaware language
ZH, .....as *s* in *pleasure;* French and Portuguese *j;* Polish *z*, with a comma over it (*ż*).

WRITING MATERIALS. In the most ancient times it would seem that writing was used for great occasions only; and that a rock, a tablet of stone or a plate of metal was the receptacle. The reader will doubtless remember, the stone tables of Moses, and the wish of Job, that his words were graven with an iron pen and lead in the rock. The works of Homer and Hesiod are said to have been first written on plates of lead, and many ancient documents on copper, of considerable extent, are still met with in India. The use of the tablet-stone is still familiar, and the sculptured rocks of the north of Europe show the practice of consigning records to this imperishable material to have been frequent amongst our ancestors of the ninth and tenth centuries. Some persons are of opinion that the first writing was upon thin pieces of wood, which from their convenience is very probable. Such boards were used at an early period by the Greeks and Romans, and were frequently covered with wax, which was of course more readily written upon than the bare wood. But such writing would be more easily obliterated, and was therefore used chiefly for temporary purposes. In one of the comedies of Aristophanes, a debtor proposes to elude the payment of his debt by melting with a burning-glass the waxen tablet on which the transaction was recorded, while his creditor should be looking over the account. When wax was used any errors were easily erased by rubbing with the blunt end of the piece of metal which served for a pen. To make the characters more visible, it appears that some black substance was smeared over the surface of the white wax, which remained in the scratched marks. The convenience of this process caused the practice to be continued long after the introduction of other materials.

Leaves of trees were used in ancient times by the Egyptians, and probably by the Greeks. The Hindoos continued the use of this material until within these very few centuries, and even at the present time books of leaves are not uncommon in the south of India, and in the island of Ceylon. The leaves of some Asiatic trees are, from their size and smoothness, so admirably adapted for books, that the cheapness and beauty of European paper has not been able entirely to supersede their use. If we may judge from the name of leaf being still applied to paper books, we should imagine these leaves to have been formerly the principal material in use. The interior bark of trees is of very ancient use, and its Latin name (*liber*) seems to intimate that it was as ancient among the Romans as the art of writing itself; no other name being used for a book than that of the writing material. In one respect the bark was superior to the leaf; it could be rolled into a volume, which was the favourite form among the ancients, while the leaf would crack if subjected to such a process.

Linen cloth was occasionally used, but was never very common. The mummy cases found in Egypt have occasionally linen manuscripts folded in them, and the Chinese before the invention of paper used silk and cotton cloths. The Romans also wrote on linen, as is stated by Pliny and others. The use of this material necessarily introduced an alteration in the process of writing. All the other substances we have mentioned were rather engraved than written upon, and an iron point was used for the purpose. To write on linen it was necessary to paint upon it with some coloured liquid, which might get dry and leave a permanent mark. This gave rise to the invention of pen and ink; the first ink used was probably composed of soot or lamp black, mixed with some sort of size or gum-water. An ink of this description may be somewhat less flowing than our modern ink, and consequently less adapted for rapid writing: but it has the great advantage of being a solid body of unalterable colour, whereas our ink is liable to have its colour destroyed by several chemical processes. The advantage of a solid body appears in the manuscripts dug up at Herculaneum, which although burned to a perfect charcoal, and buried for nearly eighteen centuries, are still legible; the ink remaining as it were embossed on the surface, and appearing blacker than the burned paper, which, from having been polished, reflects the light in a small degree.

The instrument answering to our pen was the reed, a sort of bulrush, which grew in many parts of the East. Such reeds, cut in the manner of a quill, are still used by all those nations who write the Arabic character; and are found, even by Europeans who have occasion to write much Persian or Arabic, to be more suitable to that character (a way of writing from right to left) than our pens. Those nations who have adopted the Chinese character use a camel's-hair pencil, which is held perpendicularly in the hand; and although it would seem to us to be but little adapted for quick writing, the Chinese write their complicated characters with these implements with a rapidity seldom equalled by European writers.

The quill appears to have been first in use about the year 600: the word penna, meaning a quill, is not found in any work older than that period, previous to which we usually find the word calamus, a reed. This word still exists in the modern Italian word calamajo, which signifies inkstand. The quill has an advantage over the reed in being finer and more durable, the same quill often serving for weeks, and even months. Steel-pens have, within these few years, come to supersede, in many cases, the use of the quill. The skins of animals were

another and very ancient material for writing upon. The obvious convenience of this substance must have caused its adoption as soon as any means were devised for preserving it from spoiling; and the large size of skins, added to their pliability, must have caused them to be preferred to leaves of trees. It is most probable that the rolls of books mentioned by Ezekiel, Isaiah, and other prophets, were rolls of skins; and the very ancient copies of the Bible preserved by the Jews of Cochin, in India, are said to be of leather. These skins would naturally be made as white as it was practicable, in order to receive and show the ink, and thus by degrees would parchment be invented. The invention of parchment is usually attributed to Eumenes, King of Pergamus, who reigned in the third century before the Christian Era. He was the founder of an extensive library, in which the new manufacture was largely introduced. The use of this article, aided by that of paper from papyrus, which was first brought from Egypt about the same time, had a most beneficial influence in diffusing literature. Its whiteness, strength, and size, gave it a preference over every other material; and to its durability we chiefly owe the remains of ancient science which have reached our times. Even at the present day, with all our improvements in paper-making, the use of parchment for documents of importance prevails over that of paper. Its English name is most probably a corruption of the ancient one, Pergamena, which was derived from that of the place where it was first manufactured or most used.

The Egyptian paper, from the papyrus-plant, was for a long time as much in use as parchment. The papyrus-plant is described under *Papyrus;* but the paper made from it was not what we understand by the term,—a mass of torn fragments of vegetable matter, evenly spread out, and joined together by size and their own adhesiveness; it was a species of inner bark, or thin pellicle, separated from the plant by a sharp tool, and pasted together in layers until it attained the desired size and thickness, when it was pressed and polished. This sort of paper continued to be used contemporaneously with parchment until about the twelfth century, when the introduction of modern paper caused it to be disused, and the art of making it was lost. It was very extensively employed by the Romans, and by the Greeks in Rome. All the rolls burned at Herculaneum, and preserved by the fire which appeared to destroy them, were written on papyrus. No other writing is known to exist of nearly that age, although we have some undoubted specimens of ancient Egyptian papyrus. We may observe, however, that many old manuscripts said to be on papyrus are in reality written on cotton-paper.

In the ninth or tenth century, the use of paper, properly so called, was introduced into Europe. This article had already been manufactured in China, from a remote period (A. D. 95), of the internal substance of the bamboo, sometimes of the mulberry-tree, and occasionally of cotton. About the middle of the seventh century the manufacture was brought to Samarcand, or perhaps this city was only the depôt of China paper, as it was of some other objects of Chinese skill brought into the west by the Arabs. It seems to be ascertained that a manufactory of cotton-paper was established at Mecca in the year 716, from whence it was brought by the Greeks to Constantinople. The invention of cotton-paper, as far as common use required, superseded that of all other writing materials. It was of good colour, made very thick, and glazed with a tooth or hard stone, until it became smooth and lustrous, when it resembled parchment, or vellum. The Greeks are supposed to have introduced it into Western Europe,—first, through Venice into Italy, and afterwards into Germany, where it was known by the name of Greek parchment. Its importation into Spain by the Arabs was most probably somewhat later. Documents of the eighth century on cotton-paper exist in Italy, and many in Germany, as early as the ninth and tenth; in France and Spain it appears to have come into general use about the beginning of the eleventh century; these dates are deduced from those of manuscripts now existing; but it must be remembered that such documents do not afford a certain proof of the period of the introduction of paper; it is not likely that the very first documents written have reached us; many have doubtless perished, and some may exist unknown to us; on the other hand, documents purporting to be of a certain date, may be mere copies made at a more recent period. The earliest date upon cotton-paper known in England is nearly of the middle of the eleventh century. Cotton-paper appears to have supplied all Europe until the end of the thirteenth century, when linen-paper, such as we now use, is ascertained to have been invented. This invention has been placed considerably earlier by some good authorities, but it would appear that they have confounded linen with cotton-paper. In truth the earlier specimens of linen-paper differ so little from that of cotton, that it requires a considerable acquaintance with the peculiar characters of the two kinds to distinguish them. It is most likely that before linen-paper came into use as a separate article, linen rags would be occasionally mingled with cotton by the manufacturer, and as such a mixture would tend to improve the fabric, the proportion of linen would be increased, until at length it would be used alone. The oldest documents ascertained by competent judges to be on paper made wholly of linen, date very early in the fourteenth century, and before the close of that century they are found in England, France, Spain, Italy, and Germany. But the manufacture spread slowly, although the paper itself was soon in use in all parts of Europe. The first manufactures appear to have been in Spain and Italy; into the former country the Arabs had long before introduced the making of cotton-paper, and that of linen would naturally be substituted there as early as in any place, particularly as cotton was rare, and flax an article of frequent cultivation. In the year 1366, we find an exclusive patent granted by the Republic of Venice to the town of Treviso, for the manufacture of linen-paper. England was so slow in adopting the art, that although paper was used here as early as the fourteenth century, the first paper-mill was not built until the end of the sixteenth, when it was introduced by a German at Dartford in Kent. See *Paper, History of.*

WROTHAM; a town of great antiquity, in the county of Kent, twenty-four miles south-east by east from London. It is supposed to have been originally a town of the ancient Britons, and subsequently a Roman station, from various relics discovered here. It is situated at the foot of the chalk-hills, and consists of two streets, through which passes the military way from Oldborough to Stane Street. Population in 1841, 2949.

WRY-NECK (*yunx torquilla*); a small European bird, related to and having some of the habits of

the woodpeckers; but the tail is soft, and cannot serve in any way as a support; and it never strikes the bark of trees with its bill. It also differs widely in its appearance, the plumage being mottled somewhat in the same manner as that of the American whip-poor-will. The name is derived from a habit of twisting its neck in a singular manner. This bird arrives in the south of England a few days previous to the cuckoo. It is rare in Scotland, and the northern parts of England.

WULFILAS. See *Ulfilas*.

WURMSER, Dagobert Sigismond, count von, Austrian general field-marshal, was born of a rich Alsatian family, in 1724, and, having early entered the Austrian service, was engaged through the whole of the seven years' war; at the close of which he held the rank of major. In the war of the Bavarian succession (see *Bavaria*), he commanded an army in Bohemia, and, in 1779 (January 18), gained some advantages over the Prussians at Habelschwerd. The peace of Teschen soon after put an end to hostilities. On the breaking out of the war against France, Wurmser commanded a division of the Austrian army, and passed the Rhine March 31, 1793. After gaining some unimportant advantages, he was compelled to recross the Rhine, towards the close of the year, and was recalled from his command. In August, 1795, he rejoined the army, and captured Manheim November 22. In the summer of the next year, he took the command of the army of Italy, and forced his way to Mantua, into which he threw himself September 30. Here he was finally obliged to surrender to the French troops, after a siege of nine months. After his return to Vienna, he was appointed to the command in Hungary, but died before he could leave Vienna, of the consequence of his privations and sufferings in Mantua, in the summer of 1797.

WURTEMBERG, or WIRTEMBERG; a kingdom of the western part of Germany, bounded by Bavaria on the east, and Baden on the west, and bordering on lake Constance on the south. It is of an oblong form, extending from lon. 8° to 10° 30′ E., and from lat. 45° 36′ to 49° 45′ N. It forms part of the old circle of Suabia, and covers an area of 7240 square miles. It is divided into four provinces, the Neckar, the Schwarzwald, the Danube and the Jaxt, with a population, in 1829, of 1,562,033 souls, of whom 1,506,270 were Germans, 2400 Waldenses, and 9100 Jews. The religion of the great majority of the people is Protestant: there are, also, 478,444 Catholics. There is one university at Tübingen, with, in 1830, 837 students; and there is also a considerable number of lyceums, gymnasia and high schools, with 2187 common schools (*Volkschulen*). The chief town and royal residence is Stuttgart, with a population of 31,000: the other principal places are Ulm (12,049), Reutlingen (10,180), Heilbronn, Tübingen, Hall, Esslingen, Ludwigsburg, Rothenburg and Gmünd. The great natural features of this country are two ranges of mountains, one called the Black Forest, or Schwarzwald, extending along the western frontier, the other called the Suabian or Würtemberg Alp, an insulated range of rocky hills, destitute of wood, beginning at Rotweil, and traversing the kingdom in a north-east direction. On these lofty tracts, the climate is cold and bleak; but the rest of the country is agreeably diversified with hills of moderate elevation, and pleasant valleys, which enjoy a mild and pleasant climate. The principal rivers are the Danube and Neckar, also the Enz, Muhr, Kocker, Jaxt and Tauber. Würtemberg, with the exception of the two mountainous ranges, is one of the most fertile and best cultivated parts of Germany. It produces the various kinds of grain; wine, the best qualities known abroad under the name of the Neckar wine; fruits of various kinds. The minerals are iron, silver, copper, coal and porcelain. The Black Forest produces abundance of pine and fir, considerable quantities of which are exported. The revenue, in 1830, amounted to 27,887,145 guilders; the expenditure to 27,868,136 guilders, the public debt to 28,604,350. The standing army, in time of war, is composed of 16,824 men, the peace establishment, of 4906, the contingent to the forces of the German confederation, of 13,955. The king of Würtemberg has the sixth vote in the German diet, and four votes in the plenum. The government is a constitutional monarchy: the constitution was adopted September 25, 1819. The king shares the legislative power, and the right of imposing taxes, with the estates, which consist of two chambers or houses, and possesses the entire executive power. The crown is hereditary in the male line, but, in case of the failure of males, passes to the females. The upper chamber is composed of the princes of the blood, of the heads of the mediatized families, and of members called to sit by the king. The lower chamber, or chamber of deputies, is composed of thirteen deputies, chosen by the nobility, who have the right of judicial jurisdiction, six deputies of the clergy, deputies of seven towns, and deputies of the sixty-three bailiwics of the kingdom. The reigning king, William I., born 1781, ascended the throne in 1816. By his third wife he has one son, Frederic, the crown prince, or heir apparent, born 1823. His predecessor on the throne was Frederic, declared king of Würtemberg in 1805.

*Würtemberg, History of.* The origin of the kingdom of Würtemberg, more properly Wirtemberg,* is as follows. Lords of Würtemberg are first mentioned toward the end of the eleventh century: down to the middle of the thirteenth century this family seldom appears; but from that time, the Suabian History is full of their conquests and compacts. The counts of Würtemberg were not, like other counts of the empire, originally officers of the emperor. They were the proprietors of extensive domains, and, by way of honour, called *counts*. The emperors infeoffed them at a later period. Besides the revenue which they derived from their estates, they received a considerable income from convents, towns and villages, which they agreed to protect. This branch of revenue was charged with the expenses of the government. Separate from this was the income of the patrimonial estates of the family. Such a separation is seldom found elsewhere, especially at so early a period. Taxes were to be raised only when the revenue was insufficient. This state of things began with count Ulrich, who acquired distinction in the middle of the thirteenth century. Germany was then without a head. The kings and emperors of Germany, from the death of Frederic II. to Rodolph of Hapsburg, were mere shadows. Ulrich died in 1265. His successor, count Eberhard, doubled the possessions which he had received from his father. He had many feuds with the emperors Rodolph, Adolphus of Nassau, and Albert of Austria. The emperor Henry

* Würtemberg was originally the name of a castle near Stuttgart. Hence it became the name of a family, then of a duchy and at last of a kingdom.

of Luxemburg put him under the ban of the empire, and he was attacked from all sides, so that he fled to the margrave of Baden. But Henry VII. died in Italy, and Eberhard recovered all that he had lost. His son Ulrich purchased new territories, among which was Tühingen. His son Eberhard *der Greiner*, a knight known all over Germany, purchased, during his reign, from 1344 to 1392, about twenty towns in whole or in part, and a number of villages, &c., and maintained what he had acquired in a constant struggle with the free imperial cities of Suabia. His successors continued to increase their possessions almost down to the elevation of the Würtemberg territories into a duchy, profiting by the spendthrift habits of their neighbours, and seizing the wealth of the convents and free cities when they found opportunity. But the chief cause of the gradual rise of this family was the circumstance that its territory remained undivided. The first division took place in 1442; but it lasted only to 1482, and, by the treaty of Münsingen, the same year, the indivisibility of the territory became a family law. The emperor Maximilian, in 1495, made it a duchy; and Würtemberg became now the name of a country. The dukes soon acquired importance as members of the empire. To Eberhard, the same duke who made the family law just mentioned, the people of Würtemberg owe the first steps towards a constitution founded upon compact. Eberhard had, in consequence of a family quarrel, convoked deputies of the citizens for the settlement of public affairs, in 1482. On this occasion, it was solemnly stipulated that every thing done in future by the rulers of Würtemberg for the advantage of the country, should be done with the cooperation of the prelates, counsellors and deputies. The country nobility was excluded at his own desire. Lutheranism was introduced under Christopher, and through him and his successors the "permanent delegations" (standing committees) and the separate treasury acquired completeness, and stability. Frederic, at the beginning of the seventeenth century, and Charles, in the middle of the eighteenth, attempted to overturn the constitution, but in vain. It was not till 1806, that the government became an absolute monarchy, after the constitution had lost much of its efficacy and estimation in the last years of the reign of Charles. The thirty years' war, so ruinous to all Germany, was particularly disastrous to Würtemberg. Between 1634 and 1641, the population sunk from about 330,000 men to 48,000. All who were able left the country: great numbers were destroyed in battle or by famine and pestilence: towns and villages lay deserted and in ruins. To the Swedes, under the government of the chancellor Oxenstiern, and to the Swedish ministers at Osnahrück, Würtemberg owes her restoration, which was effected by the peace of Westphalia. (q. v.) But the reign of Louis XIV. was also a time of great suffering for this country; Melac, and other monsters, burned and devastated it. During the reign of duke Louis, Würtemberg was under the government of a mistress, like France in the time of Louis XIV. From the war of the Spanish succession to the wars of the French revolution, the country was free from foreign enemies. Only once, in the second Silesian war, foreign troops marched through it; and duke Charles took part with Austria against Prussia in the third Silesian war, with the hope of being assisted by that power in suppressing the chamber of deputies. But his attempt at absolute power was defeated by the aulic council of the empire, under the guarantee of Prussia, Hanover and Denmark, and the government became still more limited. The duke at once changed the character of his administration, diminished the expense of his court, and, during the last half of his reign, did much good. He patronised arts and sciences, though in a somewhat military manner. The Charles academy (see *Schiller*, and *Dannecker*) was founded by him. The population rose to 600,000. The religion of the country had suffered by the circumstance that, from 1733 to 1797, the princes were Catholic. Under the reign of duke Charles Alexander, a Jew, named Süss, ruined the finances, of which he was minister. He was hanged by Charles's successor. Through a Prussian princess, the mother of Frederic Eugene, Protestantism became again the religion of the rulers. During the government of Frederic, the French republic took possession of the Würtemberg territories on the left bank of the Rhine, and repeatedly occupied the duchy. His son, subsequently king Frederic I., was indemnified by an additional territory, containing 12,000 inhabitants. He himself was made elector. In 1805, he took part with France in the war with Austria; in return for which he was made king, with sovereign power, and received an addition to his territory, which gave him 200,000 new subjects. As soon as the empire was dissolved, the new king became a member of the confederation of the Rhine (see the article), and, as such, took part in all the wars of France, except that with Spain. Subsequently to the last war between France and Austria (1809), the population of the kingdom was increased to 1,350,000. After the downfall of the French empire, the king secured all his acquisitions by joining the allies. Since 1815, Würtemberg, though a small kingdom, has formed one of the larger states of the Germanic confederacy. Frederic I. was a tyrant, and that to a degree which is rare at the present time; yet like many other tyrants, he was a man of talent, and judiciously promoted the good of his subjects, where it was in accordance with his own objects. He died in 1816, and was succeeded by his son William I. When Frederic I. assumed the royal title, in 1806, he declared himself absolute sovereign. The peace of Presburg made him such in fact. The people of Würtemberg, in the confusion of the new order of things, took the oath of unconditional obedience, instead of the former constitutional oath. Only two or three persons made some opposition. But when the king went, in 1814, to the congress of Vienna, some voices demanded the old constitution. At this congress, the king supported by Bavaria, opposed Prussia and Hanover, which expressed themselves in favour of the establishment of representative estates throughout Germany. But he soon declared that he intended to give a new constitution, and offered one in 1815; but it was rejected. The representatives of the people demanded the old constitution, and laid particular stress on the compact which it recognised between the people and the monarch. After the subject had been long under discussion, Frederic was on the point of cutting the whole matter short; but death prevented him. A constitution was at last agreed to by king William, September 26, 1819. It is founded on compact. (See *Constitution.*) The outlines are given in the preceding paragraph.

WURZBURG, GRAND-DUCHY OF, has been, since 1814, a part of the kingdom of Bavaria. The

former bishopric of Würzburg was founded as early as 741, when Burchard was appointed the first bishop, by St Boniface, and the Frankish kings endowed the church with some lands which were subsequently much increased by grants from the emperors, and other acquisitions made by the bishops, until the principality of Würzburg was formed. A duke of Saxony, Sigismond, having been elected bishop of Würzburg, in 1440, his successors bore the title of dukes of Franconia. The archbishop of Mayence was the spiritual superior of the bishop of Würzburg, even after the grant of the archiepiscopal dignity, in 1752, to the latter, whose title was prince of the holy Roman empire, bishop of Würzburg, and duke of Franconia. The bishopric comprised 1840 square miles, with 250,000 inhabitants; and the annual income of the bishop amounted to 500,000 guilders. By the articles of the peace of Luneville the bishopric of Würzburg, with the other "immediate" ecclesiastical possessions in Germany, were given to Bavaria as an indemnity for her lost provinces on the Rhine, with the exception of a few districts, amounting to 318 square miles, and containing 37,000 inhabitants, given to other princes. The last prince-bishop was compensated for the loss of Würzburg by an annual pension of 60,000 guilders, besides receiving 30,000 guilders as coadjutor of the prince-bishop of Bamberg. By the peace of Presburg, concluded Dec. 26, 1805, Würzburg was given to the former grand-duke of Tuscany, Ferdinand, who ceded the duchy of Salzburg, which he had received in 1803, with the dignity of elector to Austria; and the electoral title passed over to Würzburg. Bavaria was compensated for the loss. September 30, 1806, the new elector joined the confederation of the Rhine (see that article), and assumed the title of grand-duke of Würzburg. The events of 1817, and the arrangement of the congress of Vienna, made new changes. The grand-duke received back his hereditary state of Tuscany, and Würzburg was restored to Bavaria. The grand-duchy of Würzburg forming, at present, a part of the Bavarian circle of the Lower Maine, contains 1900 square miles, with 290,000 inhabitants, mostly Catholics. The country is level, but surrounded on three sides by chains of mountains. The Maine passes through a great part of it. The soil is very fertile, and produces much grain: the vine is particularly cultivated on the hills on the valley of the Maine. The best sorts of wine made are the Stein wine and the Leisten wine, which are produced only in the neighbourhood of the capital, and bring considerable sums into the country, which is not rich in minerals, and has few manufactures. Würzburg, the fortified capital of the grand-duchy, with 1970 houses, and 21,800 inhabitants (lon. 9° 55′ E., lat. 49° 46′ N.), has a fine situation, occupying both banks of the Maine, over which there is a bridge 540 feet long. Among the public buildings is the palace of the former prince-bishops, built in 1720, with a beautiful garden; at present generally occupied by the queen dowager of Bavaria. The extensive and rich Julius hospital, conducted in an excellent manner, with which is connected a lying-in hospital, a botanical garden, an anatomical theatre, and various collections, is well known. Among the churches are the large cathedral, said to have been founded by bishop Burchard, in the eighth century, but entirely rebuilt in 1042; the elegant new minster; the university church, with an observatory on the tower; &c. Würzburg contains many other fine buildings, public and private. It has a gymnasium, a central school of industry, a school for midwives, a swimming school, an institution for the blind, several seminaries, the orthopædic Caroline institute, a veterinary school, and a university, of which we shall speak below. It has also manufactures of woollen cloths, looking-glasses, leather, colours, glauber salt, tobacco, &c. The navigation on the Maine is considerable. Without the city is the citadel of Marienberg, on a hill 400 feet high. From a part of this height, called the *Leiste* (List), comes the famous Leisten wine, and from the Steinberg (stone-mountain), also near the city, comes the Stein wine. The whole space occupied by the vineyards around the city is 7000 acres. Not far from here, in the former convent of the Cistercians, is the manufactory of power printing-presses, by Messrs König and Bauer, who invented the steam-press in London—an old convent has been converted into a manufactory of power presses!—The university of Würzburg was founded by the fifty-fifth bishop, in the year 1403, on the model of that of Bologna; but it soon sunk into decay. In 1582, it was re-established by a bishop Julius, who is justly considered the true founder. After him the university is called *Julia*. Medicine has always flourished in this institution, and mainly contributed to its reputation, whilst theology and philosophy were exclusively in the hands of Jesuits, until the abolition of the order. Many distinguished scholars have been professors here; and when Würzburg was ceded to Bavaria, the government of that country invited many eminent men to fill its chairs. It also established a Protestant theological faculty. But the changes which we have mentioned at the beginning of this article, were highly injurious to the institution, and, in 1809, it was reorganized according to the views of the Catholic clergy, who had remained far behind the spirit of the time. But when Würzburg was reunited with Bavaria, a new life was given to this institution. In 1818, Bavaria received a constitution; and the university has distinguished itself by the cultivation of constitutional law, which, however, has found no favour with government. Since 1814, the number of students has been generally from 650 to 700; sometimes more. The foreign students, about 150 in number, are mostly connected with the medical faculty. In 1821, a professorship of French law was established for the Bavarian subjects of the circle of the Rhine. There is a faculty for teaching political economy. The library contains above 100,000 volumes. Gustavus Adolphus carried the whole library which he found there to Sweden. We should also mention the musical institute, in which instruction is given gratis in singing and playing. The school-masters of Bavaria are here instructed in music. The Bavarian government seems to patronise the new university of Münich somewhat at the expense of Würzburg.

WYAT, Sir Thomas, a distinguished courtier of the age of Henry VIII., son of Sir Henry Wyat, master of the jewel office, was born in 1503, at Allington castle, in the county of Kent, the seat of the family. He commenced his academical education at Cambridge, which he completed at Oxford, and, on quitting the university, went on his travels to the continent. On his return to England, he appeared at court, where the reputation he had already acquired as a wit and a poet, introduced him to the notice of Henry, who knighted him, and retained him about his person. In the

affair respecting the king's divorce from queen Catharine, Sir Thomas narrowly escaped losing the royal favour, by an indiscreet expression of his opinions on the subject; but, finding how the business must terminate, he had sufficient pliability of disposition to veer about in time, and, by a facetious remark on the possibility of "a man's repenting his sins without the leave of the court of Rome," so met the king's humour, that his influence increased rather than suffered any diminution. He was subsequently employed on several diplomatic missions to different powers, and died in 1541. His poetical works, which consist principally of love elegies, odes, &c., and a metrical translation of the Psalms, were published in conjunction with those of his contemporary and personal friend, the earl of Surrey. They evince more elegance of thought than imagination, while his mode of expression is far more artificial and laboured than that of his friend. He must not be confounded with a Sir Thomas Wyat who headed an insurrection in the reign of queen Mary.

WYCHERLEY, William, one of the wits and dramatists of the reign of Charles II., was the eldest son of a gentleman of Cleve, in Shropshire, where he was born about 1640. After receiving a school education, he was sent to France, where he embraced the Catholic religion. He returned to England a short time before the restoration, and resuming Protestantism, was entered a gentleman commoner of Queen's college, Oxford, which he left without a degree, and took chambers in the Middle Temple. He paid, however, little attention to the law, but became a man of fashion on the town, and made himself known, in 1672, as the author of Love in a Wood, or St James's Park, a comedy. This piece brought him into much notice: he became a favourite of the meretricious duchess of Cleveland, and was much regarded by Villiers, the witty and profligate duke of Buckingham, who made him captain-lieutenant in his own company, and one of his equerries, or masters of the horse. He was likewise in great favour with the king himself; but he lost the king's countenance by a clandestine marriage with the countess of Drogheda, a young, rich, and beautiful widow, whose jealousy embittered their union. At her death, she settled her fortune upon him; but, his title being disputed, the costs of law and other encumbrances produced embarrassment, which ended in arrest. He remained in confinement seven years, until released by James II., who was so pleased with his comedy of the Plain Dealer, that he ordered his debts to be paid, and added a pension of £200 per annum. Wycherley's modesty rendering him unwilling to disclose the whole that he owed, he still remained involved until the death of his father, whose estate descended to him, but with considerable limitation, which prevented him raising money on it. He, however, discovered an expedient, by marrying, at the age of seventy-five, a young gentlewoman with a fortune of £1500, whom he recompensed with a good jointure. He died about fifteen days after the celebration of the nuptials, in 1715, enjoining his wife not to take an old man for her second husband. Besides the plays already mentioned, he wrote the comedies of the Gentleman Dancing-Master, and Country Wife, and a volume of poems, printed in 1660. The correspondence between him and Pope, then a youth, is printed in the collection of that poet's letters. He is now only remembered as a dramatist, and that principally by his Plain Dealer, and Country Wife, the latter of which is better known by the title of the Country Girl—a name given to a modern adaptation, which gets rid of much objectionable coarseness. His Plain Dealer may be deemed an English counterpart of the Misanthrope of Molière, displaying more license, with considerable wit, humour, and comic force of character. The Posthumous Works of Wycherley, in Prose and Verse, were published by Theobald, in 1728.

WYCLIFFE. See *Wickliff.*

WYCOMBE, High, or Chipping; a horough town in Buckinghamshire, 29 miles west by north from London. Though not the largest, it is the handsomest town in the county, and owes much of its prosperity to the rivulet called Wycombe stream, which sets in motion a considerable number of corn and paper mills, and after a long winding course, falls into the Thames below Marlow. It consists of one large street, with several smaller branching from it, and stands on the high road from London to Oxford. The inhabitants are chiefly employed in the paper-mills, lace manufactures, and malting trade. Population in 1841, of horough, 3184; of parish, 3296.

WYE; a small river of South Wales, which rises on the mountain of Plynlimmon, and falls into the Severn. It is distinguished for the beauty and variety of its scenery.

WYKEHAM, William of, bishop of Winchester, and lord high chancellor of England, a distinguished prelate of the fourteenth century, was born at Wykeham, a village in Hampshire, in 1324, of respectable parents, but so poor, that, but for the liberality of the lord of the manor of Wykeham, a liberal education would have been beyond his reach. On the completion of his studies, he became private secretary to his patron, and was by him recommended to the notice of Edward III. In 1356, Edward appointed him to superintend the erection of Windsor castle as surveyor of the works. (See *Windsor.*) On one of the towers he put an inscription, This made Wykeham. His enemies exclaimed against his presumption. Wykeham, however, assured the king that he had intended to intimate, that his diligence in forwarding the building had raised him, through the favour of his prince, to his present rank. Wykeham, having taken holy orders, rose rapidly to the highest dignities in church and state. In 1366, he was elevated to the rich see of Winchester, and, in 1367, reached the highest point of his career, the chancellorship of England. This office he discharged with great ability nearly four years, distinguishing himself by his orderly management of his diocese, and by his disinterestedness in dedicating a large portion of his temporalities to the improvement of his cathedral, and the foundation of a grammar school at Winchester, which still exists as a monument of his munificence. (See *Winchester.*) In 1371, a party at court opposed to the increasing wealth and influence of the clergy, and headed by John of Gaunt, duke of Lancaster, succeeded in persuading the parliament that his power was too great for a subject: and he was compelled to resign the seals. For the remainder of this reign, he continued apart from the court, consoled for his disgrace by the attachment of the people. On the accession of Richard, he was restored to his dignities and emoluments. In 1386, he completed his noble foundation of New college, Oxford. In the chapel belonging to this establishment, his crosier, or pas-

toral staff, is still preserved, supposed to be the only one in England. Scarcely was this college finished, when he commenced erecting another at Winchester, which he also lived to see finished. In 1391, he resigned the chancellorship. His death took place in 1404. See his *Life*, by Lowth; and Milner's *History of Winchester*.

WYMONDHAM, OR WINDHAM; a market-town in the county of Norfolk, situated on the high road from Norwich to London, distant from the latter 100 miles, north-east by north. It first became a place of importance in the reign of Henry I., in consequence of the foundation of a priory of black monks by William D'Albini, which was, in 1448, elevated to the rank of an abbey. The two Kets, tanners and natives of this town, who endeavoured to inflame this county in the reign of Edward VI., used to meet their companions under an oak in the neighbourhood, a part of which is still pointed out as a kind of historical record; after they were defeated by the Earl of Warwick, the elder was hanged in chains at Norwich castle, and the younger on the steeple of Wymondham church. The town has suffered severely by the two dreadful scourges of fire and plague; by the former in 1615, when upwards of 300 houses were consumed, and by the latter in 1631. In the market-place is an ancient cross. The greater portion of the inhabitants are employed in weaving, chiefly bombasins and crapes. The manufacture of woodenwares is also carried on in a small way. Population of town and parish in 1841, 5179.

WYNDHAM, SIR WILLIAM, an eminent English senator and statesman, was born at Orchard-Wyndham, in Somersetshire, in 1687. His father, of the same name, had been created a baronet by Charles II. He was educated at Eton, whence he was removed to Christ-church, Oxford. On quitting the university, he made the tour of the continent, and, on his return, was chosen knight of the shire for the county of Somerset. He soon became conspicuous as one of the ablest members of the house of commons; and, on the change of ministry which produced the treaty of Utrecht, was appointed master of the buck-hounds, then secretary at war, and, in 1713, chancellor of the exchequer. On the breach between the earl of Oxford and viscount Bolingbroke, he adhered to the interests of the latter. Upon the death of queen Anne, he was displaced; and, in the ensuing parliament, took a leading part in opposition, and signalized himself by advocating the treaty of Utrecht, and in his defence of the duke of Ormond and earls of Oxford and Strafford, when impeached by the house of commons. On the breaking out of the rebellion in Scotland, under the earl of Mar, in August, 1715, he was arrested at his seat in Somersetshire, on suspicion of being concerned in that event; but he made his escape from the messenger. On a proclamation being issued for his apprehension, he soon after surrendered himself, and was committed to the Tower, but was never brought to trial. On regaining his liberty, he continued his opposition, but on more broad, and less Jacobitical grounds than heretofore, and remained in strenuous contest with ministers until his death, in 1740. His son, by the daughter of the duke of Somerset, became, on the death of the duke, earl of Egremont, the title having been granted to that nobleman, with remainder to his grandson. The latter succeeded the first earl of Chatham as secretary of state, and died in 1763.

WYTE, OR WITE, in the ancient English customs; a pecuniary penalty or mulct. The Saxons had two kinds of punishments—*were* and *wyte*; the first for the more grievous offences: the wyte was for the less heinous ones. It was not fixed to any certain sum, but left at liberty to be varied according to the nature of the case.

WYTTENBACK, DANIEL; a learned philologist of the Dutch school, was a native of Berne, and born in 1746. His father having been appointed a professor at Marburg, he was admitted a student of that university. He afterwards went to Göttingen to study under Heyne, with whose assistance he published, in 1769, *Epistola Critica ad Ruhnkenium super nonnullis Locis Juliani cui accesserunt Animadversiones in Eunapium et Aristænetum.* This learned work procured him the friendship of Ruhnken, whom he visited at Leyden, and who obtained for him the professorship of philosophy and literature in the college of the Remonstrants at Amsterdam. He subsequently devoted his talents to the illustration of the works of Plutarch, and, in 1772, printed, at Leyden, the treatise of that writer, *De Sera Numinis vindicta*, with a learned commentary. In 1779, the magistrates of Amsterdam created a philosophical professorship at an institution called the Illustrious Athenæum, to which Wyttenbach was presented; and, in 1799, he was appointed professor of rhetoric at Leyden, where he died in 1819. The result of his researches relative to Plutarch, appeared in his excellent critical edition of the Moral Works of Plutarch, published at Oxford (1795—1810, 7 vols. 4to., and 12 vols. 8vo.) Professor Wyttenbach was the author of *Præcepta Philosophiæ logicæ* (Amst. 1781, 8vo.); *Selecta Principum Græciæ Historicorum*, with notes (1793 and 1807); *Vita Ruhnkenii* (1800, 8vo.); and some other works. His Opuscula appeared at Leyden in 1821; and there is a Life of him by Mahne (Ghent, 1823.)

# X

**X**; the twenty-fourth letter of the English alphabet, taken from the Latin, into which it was adopted from the Greek. The pronunciation of it, in the middle and at the end of words, is like that of *cs* or *ks*. At the beginning of a word, it has precisely the sound of *z*; and the English alphabet might therefore dispense with this character without any inconvenience, except where etymology re-

quires it. The Italians never use it, on account of its guttural character, which is hostile to the spirit of their language. When it occurs between two vowels, they supply its place by *ss*, as in *Alessandro:* when it immediately precedes *c*, they substitute another *c* for it, as in *eccellente*. In Spanish, the letter *x* had formerly two very different sounds, one like that of *s* or *cs*, derived from the Latin, and another strongly guttural, derived from the Arabian. At present, however, it is pronounced like *s* when it is followed by a consonant, and like *ks* when it comes between two vowels. The guttural sound formerly represented by *x*, is now represented by *j* before *a*, *o* and *u*, and by *g* before *e* and *i;* so that it is no longer necessary to put a circumflex over the vowel following the *x*, when the latter is to be pronounced like *ks*. The Germans, in words belonging to their language, have generally resolved the *x* into *ks*, *gs*, or *chs;* and only when the derivation of the word containing the *x* is uncertain, so that it cannot be determined into what letters the *x* ought to be resolved, this character is retained. In French, *x* has also all the various pronunciations of *s*, *cs*, *gz*, and *z*, according to circumstances. In many cases, it is not pronounced at all, and only indicates the plural number to the eye. The Latins call *x* a semivowel and one of the letters termed *double*. The Greek characters for this letter were Ξ and ξ; and the character which we now use to designate X, was their guttural. From the circumstance that this guttural is the initial letter in ΧΡΙΣΤΟΣ (*Christ*), the letter *x* of the Latin alphabet—the same in figure, but different in sound, —acquired much importance at an early period, particularly in the monogram ☧, composed of the two first Greek letters of the word Χριστος. Constantine the Great used it both on his coins, and military ensigns. Several other emperors imitated his example; and this monogram came into common use with the Christians, as on lamps, and other utensils, on tombs. &c. Constantine, however, did not invest this monogram, but merely gave it the Christian meaning. It is found on ancient medals, and coins; and its precise meaning there is not ascertained. As persons who are unable to write are accustomed to put a cross instead of their signature, or, at least, to touch the pen of him who makes the cross for them, such crosses, when the signatures are printed, are represented by an ⋊, long strings of which may be found at the end of treaties concluded between the United States and the Indian tribes. X, with the Romans, denoted ten, being composed of two V s. thus $\overset{V}{\underset{A}{X}}$. (See *V.*) In this position, ⋊, it signifies a thousand, and with a dash over it ($\overline{X}$), ten thousand. X enters largely into the Roman system of notation. When it stands before a letter designating a larger number than itself, it must be subtracted; when after, it must be added: thus XC is equal to ninety; CX to a hundred and ten. *X*, *y*, *z*, are commonly used in mathematics, to denote variable quantities, whilst the letters at the beginning of the alphabet are used for the constant quantities. St Andrew's cross, so called, has the shape of an X, the legend of this saint representing him as having been crucified on such a cross. See *Cross.*

XAGUA BAY; a large bay on the south coast of Cuba; lon. 81° 20′ W.; lat. 22 10′ N. This is one of the best ports in the West Indies, and is fifteen miles in circumference, surrounded with mountains, which break the force of the winds.

XALAPA; a town of the Mexican republic, in the state of Vera Cruz; 52 miles north-west of Vera Cruz; lon. 96° 55′ W.; lat 19° 30′ N.; population, 13,000; a bishop's see. The sky at Xalapa, during the summer is beautiful and serene, but from December to February, has a melancholy aspect. The sun and stars are frequently invisible for two or three weeks together. The wealthy merchants of Vera Cruz have country houses at this town, where they enjoy a cool and agreeable retreat, while the coast is almost uninhabitable, from the mosquitoes, the heat, and the yellow fever. The elevation of this town above the sea is 4264 feet. This town gives name to the purgative root called *jalap*, or *Xalap*. See *Jalap.*

XALISCO. See *Guadalaxara.*

XANTEN (*Santen*), a town in the Prussian province of Cleves-Berg, in the government of Düsseldorf, not far from Rheims, with 2650 inhabitants, has some manufactures, and is remarkable on account of the Roman antiquities which are found in its neighhourhood. It is supposed that *Ulpia Castra* stood here, and *Vetera Castra* in the neighbourhood. The foundations of an amphitheatre are yet visible. Some also think that the traces of the *prætorium* of Quintus Varus are to be seen on the Vorstenberg, and in the neighbourhood of the old castle, those of the *Colonia Trajana.*

XANTHIC OXIDE, is the name given by Dr Marcet to a very rare species of calculus. It is of a reddish or yellow colour, soluble both in acids and alkalies, and its solution in nitric acid, when evaporated, possesses a brilliant yellow tint, from which (ξανθος, *yellow*) it derives its name.

XANTHIPPE; the scolding wife of Socrates, whose name, like so many others, has come down to posterity only by being associated with that of an illustrious character. According to what we are told of her it required the patience of a sage like Socrates to endure her humours. When Alcibiades asked Socrates how he could live with such a woman, he answered, "Because she serves to exercise my patience, and makes me able to bear all the injustice of others towards me." Xenophon makes Socrates, in the well-known philosophical banquet, defend his wife against the uncivil attacks of Antisthenes. On one occasion, when Alcibiades sent an excellent cake to his philosophical master, she snatched it out of the basket in which it had been brought, and trod upon it. "Thou wilt now not he able to eat of it," was all the remark which Socrates made. Xanthippe, however, did justice to the incomparable character of her husband: she publicly acknowledged that she had always seen him calm, even in the most trying circumstances. This trait might lead us to suspect that the character of Xanthippe was intentionally thrown too much into the shade, in order to make the contrast with that of Socrates the greater. However this may be, her name has become synonymous with that of a scold, who imbitters the life of her husband.

XANTHOGEN, (from ξανθος, *yellow*, and γενναω, *to generate*,) is the name given by M. Zeise to the radical of a hydracid, which he calls hydroxanthic acid. The acid is a compound of carbon, sulphur, and hydrogen, and the radical he supposes to be a sulphuret of carbon.

XANTHUS; see *Scamander;* also a town of Lycia, on the river of the same name, at the distance of about fifteen miles from the sea-shore. The inhabitants are celebrated for their love of liberty and national independence. Brutus laid siege to their

city; and, when they could no longer defend themselves, they set fire to their houses, and destroyed themselves. The conqueror wished to spare them; but, though he offered rewards to his soldiers, if they brought any of the Xanthians alive into his presence, only 150 were saved.

XANTIPPUS; a general of the Lacedæmonians, of an unpromising exterior, but distinguished for his talents. His countrymen sent him with a small army, in the first Punic war, to assist the Carthaginians against the Romans. The Roman consul, Regulus, had beaten the Carthaginian fleet, though much superior to his own, had effected a landing in Africa, defeated the armies of Carthage, and advanced as far as the city. The hard conditions of peace prescribed by him exasperated the Carthaginians. They gave the chief command of their forces to Xantippus. He manœuvred so as to bring the Romans into a disadvantageous position, overcame them, and even took their general, Regulus, prisoner. The Carthaginians thus again obtained the superiority over the Romans. But, much as they owed to Xantippus, they entertained a paltry jealousy that he would gain too much influence. They therefore sent him back to Lacedæmon, and are said to have given his attendants secret orders to kill him on the way: according to some accounts, they gave him a leaky vessel, in which he perished. This charge, however, is by no means proved; and some Greek writers say that he arrived safely in his native country.—There was also an Athenian general of this name, who, with Leotychides, defeated the Persian fleet at Mycale. A statue was erected to his honour in the citadel of Athens. He made some conquests in Thrace, and increased the power of Athens. He was father to the celebrated Pericles by Agariste, the niece of Clisthenes, who expelled the Pisistratidæ from Athens.

XAVIER, St Francis, a celebrated Spanish missionary, surnamed the *apostle of the Indies*, and one of the first disciples of Ignatius Loyola, was born April 7, 1506, in the castle of Xavier, at the foot of the Pyrenees. His father was a gentleman of Navarre. He was the youngest of many children, almost all of whom entered the army. He himself, however, early manifested a disposition for study. He pursued his studies at the college of St Barbe, in Paris, and taught philosophy in the college De Beauvais, in the same city, at the time when Ignatius Loyola entered this college to resume his studies. Loyola was already occupied with his plan of establishing a society for the conversion of infidels, and endeavoured to induce Xavier to take part in it. He at first declined; but, after Le Fêvre, or Favre, had associated himself with Loyola, he yielded. Laynez (q. v.), Salmeron, Nicholas Alphonso, surnamed Bobadilla, and Rodriguez, a Portuguese, followed. All six, together with Loyola, on the day of Assumption, in the year 1534, took the vows of poverty and chastity, to which they added that of making a pilgrimage to the holy sepulchre, and of devoting themselves to the conversion of infidels. In case of failing in this attempt, they were to do such service to the church as the pope should direct. Towards the end of 1537, they met at Venice, according to agreement; and, at this time, their number had been increased by the accession of three more persons. Soon after, Xavier was ordained priest, and, when John III., king of Portugal, desirous of propagating the Christian faith in his Indian possessions, requested of Ignatius Loyola a suitable missionary, Xavier determined to undertake the office. April 8, 1541, he embarked at Lisbon, and, in 1542, arrived at Goa. According to the custom which he always followed, he took lodgings in the hospital, where he spent his leisure time in attending on the sick. He preached, and converted to Christianity many heathens, Jews and Mohammedans there, and on the coast of Comorin, at Malacca, Travancore, Macassar, in the Molucca islands, Malacca, Ceylon, Cochin, and, in 1548, returned to Goa, where a college of Jesuits had been established. Thence he went to Japan; but, not having been able to learn the language of the country, he met with little success. He ascribed this, in part, however, to the simplicity of his appearance as a humble pilgrim, and resolved to adopt a different fashion. He presented himself to the king of Japan in rich attire, furnished with letters from the viceroy of the Indies and the bishop of Goa, and with rich presents. He now succeeded perfectly. The king not only gave him permission to preach, but also issued an edict which permitted every one to embrace the new faith. He converted, according to his statement, above 3000 souls, who, twenty-five years later, were found faithful to their religion, though entirely detached from the rest of Christendom. At a later period, other missionaries obtained still greater success. Xavier resolved to introduce Christianity into China. He embarked with a body of attendants, and went to Malacca; but don Alvarez, governor of this island, refused to let the expedition proceed. Xavier, however, was not to be stopped. He departed alone, in a Portuguese vessel, for the island of Sancian, opposite to Canton, twenty-five leagues from the continent; but, after having made all the preparations for his perilous enterprise, he fell sick, and died, after a long and painful illness, December 2, 1552, having spent ten years and a half in his laborious missions. It is said that he was buried on the sea-shore, and lime put into the grave to consume the body, which, however, being afterwards disinterred, was found entirely fresh; and, according to the poetical conception of the Catholics, which appears in so many legends of saints, a sweet odour exhaled from the whole body. A short time after, his remains were deposited in St Paul's church at Goa. Many miracles having been ascribed to Xavier, he was beatified by Paul V., in 1619, and canonized by Gregory XV., in 1622. His extant works are Five Books of Epistles (Paris, 1631, 8vo.): a Catechism; *Opuscula*. Bartoli, a Jesuit, wrote, in Italian, the life of St Xavier, which was translated into Latin by Jannin, in 1709. Xuarès also published *Vida iconologica del Apostol de las Indias, S. Francisco Xavier* (Rome, 1798).

XEBEC; a small, three-masted vessel, navigated in the Mediterranean sea, and distinguished from other European vessels by the great projection of the prow and stern beyond the cut-water and stern-post. The sails are, in general, similar to those of the polacre; but the hull is different. Being generally equipped as a corsair, the xebec is constructed with a narrow floor, for the sake of speed, and of a great breadth, so as to be able to carry a considerable force of sail without danger of overturning. As these vessels are usually very low built, their decks are made very convex, in order to carry off the water more readily. But, as this convexity would render it difficult to walk thereon at sea, particularly when the vessel rocks by the agitation of the waves, there is a platform of grating extending

along the deck from the sides of the vessel towards the middle, whereon the crew may walk dry-footed, while the water is conveyed through the grating to the scuppers. The xebecs which the Algerines used, carried from 300 to 450 men, two thirds of whom were commonly soldiers. They had from sixteen to twenty-four cannon. See a representation of a xebec in Plate 82.

XENIA (from the Greek word Ξενιον); presents which were given guests among the Greeks and Romans. The Roman epigrammatist Martial inscribed the thirteenth book of his epigrams *xenia*. They are a number of distichs dedicated to his friends and patrons, and each contains praise or blame under the head of some subject connected with the table. Schiller's *Musenalmanach* for the year 1797 (Tübingen) contained more than four hundred distichs bearing the same name, and having reference principally to the then existing state of literature in Germany. They are ascribed to Schiller and Göthe.

XENOCRATES; an ancient philosopher, born in Chalcedon, and educated in the school of Plato, whose friendship he gained. Though of a dull and sluggish disposition, he supplied the defects of nature by unwearied attention and industry. Plato esteemed him much; but his want of polished manners often called forth his teacher's advice to sacrifice to the Graces. He travelled with Plato to Sicily, and after his death went with his fellow scholar Aristotle to Asia Minor, but soon returned. He succeeded Speusippus in the school of Plato, about 339 years B. C. He was remarkable as a disciplinarian, and required that his pupils should be acquainted with mathematics before they came under his care. He even rejected some who had not that qualification, saying that they had not yet found the key of philosophy. He recommended himself to his pupils not only by precepts, but more powerfully by example. Alexander sent some of his friends with fifty talents for the philosopher. Not to offend the monarch, he accepted a small sum, about the two hundredth part of one talent. The courtesan Lais is said to have tried every art in vain to triumph over the virtue of Xenocrates. His integrity was so well known that, when he appeared in the court as a witness, the judges dispensed with his oath. He died in his eighty-second or eighty-fourth year, after he had presided in the academy for above twenty-five years. It is said that he fell, in the night, with his head into a basin of water, and that he was suffocated. He had written above sixty treatises on different subjects, all now lost.

He is to be distinguished from another Xenocrates, surnamed the *Physician*, who lived in the time of Tiberius or Nero, and of whose writings only one work, on the use of aquatic animals as food, exists. It gives a pretty complete idea of the knowledge then existing of the natural history of fishes and shell-fish.

XENOPHANES; a Greek philosopher, celebrated as the founder of the Eleatic school. He was a contemporary of Pythagoras and Anaximander, and is said to have attained to the age of a hundred years. Having been banished from his native city, Colopho, he went to Sicily, and thence to Græcia Magna. He settled, about 536 B. C., at Elea; and hence his system, and the school which he founded, derive their name. He did not remain satisfied with the opinions of his predecessors, in philosophy, but made new inquiries into the nature of things. He attacked, in his *silli*, the mythological fables of the gods given by Homer and Hesiod, and inclined to an ideal pantheism. His chief doctrines are these: All Being is one, unchangeable, and perfect: this Being is called God. He is not to be represented under any human form; but all forms proceed from him, and he is able to do every thing. The apparent variety of things is not real. He is said to have maintained that every thing originated from earth and water, and to have considered the moon an inhabited body. He denied the possibility of predicting future events, and asserted that there is much more good than evil in the world. In general, he complained of the uncertainty of human knowledge. Of his poems, in which he treated of philosophical and other subjects, we have only fragments contained in the works of Athenæus, Plutarch and others. The fragments of his didactic poem Περι Φυσεως have been collected in the *Poesis philosophica* of Stephanus; subsequently, and more completely, by Fülleborn and recently by Brandis, German philologists.

XENOPHON; a celebrated historian and general, was born at Athens, about 450 B. C. He lived during a period in which the greatest political and intellectual excitement existed at Athens, and in which the most distinguished men, of whom he was one, appeared on the stage. Xenophon was a favourite disciple of the immortal teacher of wisdom, Socrates; and from his writings, especially his Apology, and the *Memorabilia* of Socrates, we learn the true spirit of the Socratic philosophy. Xenophon was less a speculative than a practical philosopher. He dedicated himself to that state in which he was born, and fought, together with his teacher, in the Peloponnesian war. When the Persian prince, Cyrus the Younger (so called in contradistinction to the founder of the monarchy), contended with his elder brother Artaxerxes Mnemon for the throne, the Lacedæmonians sent him auxiliaries, among whom Xenophon served as a volunteer. He became a favourite of Cyrus, who was defeated and lost his life in the plains of Babylon. The principal officers of the auxiliary army having been likewise killed in battle, or taken prisoners by artifice, and then put to death, Xenophon was selected to command the Greek forces, 10,000 men strong. They were in a most critical situation, in the midst of a hostile country, above 2000 miles from home, without cavalry, surrounded by enemies and innumerable difficulties; but Xenophon was able to inspire them with confidence, to repress insubordination, and to lead them home to Greece. They marched 1155 parasangs, or 34,650 stadia, in 215 days. This retreat is famous in the history of war. It has been compared to various retreats in modern times; for example, that of Moreau, in the south of Germany; but the circumstances are too different to admit of any proper parallel being drawn. Xenophon himself has described this retreat, and, at the same time, the whole expedition of the younger Cyrus, in his *Anabasis*, which has been geographically illustrated, particularly by James Rennell. That Xenophon is actually the author of this work has been proved by C. W. Krüger (author of the *Vita Xenophontis*), in his work *De Authentia et Integritate Anabaseos Xenophonteæ* (Halle, 1824). The expedition might have been forgotten, or, at least, very imperfectly known, had not the Grecian general been so excellent a writer. Xenophon afterwards accompanied the Spartan king Agesilaus to Asia, on his expedition against the Persians. He

enjoyed his confidence; he fought under his standard, and conquered with him in the Asiatic provinces, as well as at the battle of Coronæa. His fame, however, did not escape the aspersions of jealousy; he was publicly banished from Athens for accompanying Cyrus against his brother; and, being now without a home, he retired to Scillus, a small town of the Lacedæmonians, in the neighbourhood of Olympia. In this solitary retreat, he dedicated his time to literary pursuits; and, as he had acquired riches in his Asiatic expeditions, he began to adorn the country which surrounded Scillus. He built a magnificent temple to Diana, in imitation of that of Ephesus, and spent part of his time in rural employments, or in hunting in the woods and mountains. His peaceful occupations, however, were soon disturbed by a war which arose between the Lacedæmonians and Elis. The sanctity of Diana's temple, and the venerable age of the philosopher, were disregarded; and Xenophon, driven by the Eleans from his favourite spot, retired to the city of Corinth. In this place he died, in the eighty-seventh year of his age. Besides the works already mentioned, Xenophon wrote the Banquet of the Philosophers, a counterpart of a composition of Plato, and several smaller works, relating to agriculture, politics, and the science of war; also a history of the Greeks, in seven books, and a continuation of the history of Thucydides, down to the battle of Mantinea; and the Life of Cyrus the Elder, more known under the name of Cyropædia. This celebrated production is not a real history, but rather a historical novel. It contains Xenophon's ideas respecting the best form of government; and the biography of the greatest ruler known at that time is embellished to illustrate the writer's principles. Xenophon considered the monarchical form of government the best; and his purpose seems to have been to recommend it to his countrymen. His style in general, and particularly in this work, is a model of elegant simplicity. Xenophon is therefore one of those classics which are particularly selected for the instruction of youth, though his philosophical works are not proper for beginners. The Greeks esteemed his merit as a writer so high that they called him the "Greek bee," and the "Attic muse." His works have been often published, separately and together. The most recent editions are by Schneider and Weiske. There is no other instance on record of a man who was at the same time so great a general, so excellent a writer, and so amiable a philosopher.

Another Xenophon, an amatory poet, lived towards the beginning of the third century A. D., was a native of Ephesus, and wrote a tale called the History of Habrocomes and Anthia.

XERES, Francis; a Spanish historian, who accompanied Pizarro in his conquest of Peru, and acted as his secretary. By order of the conqueror, he addressed a detailed account of this great expedition to Charles V. The work of Xeres appeared at Salamanca in 1547, folio, under the title *Conquista del Piru: Verdadera Relacion de la Conquista del Piru y de la Provincia del Cuzco llamada la Nueva Castilla*, &c. It is sometimes to be found at the end of Oviedo's Natural History of the Indies. The work of Xeres has been translated into Italian, and inserted by Ramusio in the third volume of his Collection of Travels and Voyages. Notwithstanding the great partiality of Xeres for the conqueror of Peru, his history is important, as he was an eye-witness of every thing he relates, and took an active part in the war which decided the fate of that beautiful country.

XERES DE LA FRONTERA: a town of Spain, in Seville, on the Guadalete; fifteen miles north-north-east of Cadiz, and thirty-two south of Seville; lon. 6° 15′ W.; lat. 36° 41′ N.; population, between twenty and thirty thousand. It is pleasantly situated, surrounded with walls, the streets wider than those of Cadiz, clean and neatly paved, and some of the houses splendid. It is an ancient town, supposed to be built on the site of Asta Regia. In the environs is produced the wine called *sherry*, a corruption of Xeres. Some sweet wines are also produced in this neighbourhood, of which the best known is the *vino tinto*, or *tent wine*. The country around is very fertile, and the climate delightful.—Near this town a battle was fought between the Moors and Goths, in 712, in which Roderic, the last king of the Goths, lost his life.

XERES WINE. See *Sherry*.

XERXES I., king of Persia, famous for his unsuccessful attempt to conquer Greece, began to reign in 485 B. C., and was the second son of Darius Hystaspes. He was preferred to his brother Artabazanes, who had been born before his father was raised to the throne; while Xerxes was born after that event, and was the son of Atossa, daughter of Cyrus. This preference caused no struggle between the brothers. After having subdued Egypt in a single campaign, he thought himself able to execute the plan of conquering Greece, which had been already conceived by his father. He collected for this purpose an immense army. The historians estimate it at a million of men. In all probability, the Greeks greatly exaggerated the number of their enemies; and the train of women and slaves, who followed the army, made, at least, half of its numerical amount: still, however, the power of Xerxes was beyond all comparison superior to that of the Greeks. But these fought for their home and their freedom, and the Persian soldiers were hirelings. By means of a bridge of boats Xerxes crossed the Hellespont. The Greeks awaited their enemy on the frontier of their country, in the pass of Thermopylæ. After the heroic Leonidas had fallen with his Spartans (see *Leonidas* and *Ephialtes*), Xerxes pressed forward, and burned Athens, which had been forsaken by its inhabitants. The first naval battle between the two powers, at Artemisium, had been undecisive; but it inspired the Greeks with new confidence; and the second naval action, at Salamis, in which, if we believe the Greek historians, two thousand Persian vessels were engaged against three hundred and eighty Greek, eventuated in the defeat of the Persians. Xerxes now quitted Greece, leaving behind him his best general, Mardonius, who, not long after, was entirely beaten at Platææ. Xerxes himself returned from his expedition in the most humiliating manner. The bridge of boats over the Hellespont had been destroyed and he passed the strait in a small fishing boat. He now gave himself up to debauchery; his conduct offended his subjects, and Artabanus, the captain of his guards, conspired against him, and murdered him in his bed, in the twenty-first year of his reign, about 465 years before the Christian era. The personal accomplishments of Xerxes have been commended by ancient authors; and Herodotus observes, that there was not one man among the millions of his army, that was equal to the monarch in comeliness or stature,

or that was as worthy to preside over a great and extensive empire. Justin exclaims, that the vast armament which invaded Greece was without a head. It is said of Xerxes, that, when he reviewed his army from a stately throne in the plains of Asia, he suddenly shed tears on the recollection that, of the multitude of men whom he saw before his eyes, in one hundred years, none would be living. He is also said to have ordered chains to be thrown into the sea, and the waves to be whipped, because the first bridge which he had laid across the Hellespont had been destroyed by a storm. He cut a channel through mount Athos, and saw his fleet sail in a place which before was dry ground. The very rivers are said to have been dried up by his army as he advanced towards Greece, and the cities which he entered reduced to want and poverty.

XERXES II. succeeded his father, Artaxerxes Longimanus, on the throne of Persia, about 425 years B. C., and was assassinated in the first year of his reign, by his brother Sogdianus.

XIMENES, Francisco, cardinal, archbishop of Toledo, and prime minister of Spain, a great statesman, to whom Spain is very much indebted, was born in 1437, at Torrelaguna, a small village in Old Castile, where his father was a lawyer. He studied at Salamanca, travelled afterwards to Rome, and obtained a papal bull, which secured to him the first vacant benefice in Spain. The archbishop of Toledo refused to give him any place; and, Ximenes having manifested irritation upon this refusal, he caused him to be imprisoned. Ximenes, nevertheless, recovered his freedom, and the cardinal Gonzalez Mendoza, bishop of Siguença, appointed him his grand vicar. He afterwards entered the Franciscan order, became father confessor to queen Isabella of Castile, and, in 1495, archbishop of Toledo. He did not accept this dignity till after many refusals, and an express command from the pope. As an archbishop, he was very zealous, conducting as a father towards the poor, abolishing a multitude of abuses, and adhering stedfastly to his resolution, that the public offices should be filled with honourable and well-qualified men. He gave excellent rules to the clergy of his diocese, and, in spite of all opposition, effected a reform in the mendicant orders of Spain, founded, in 1499, a university at Alcala de Henares, and undertook, some years after, an edition of the Old Testament in six languages. (See *Polyglot.*) Before this, in 1514, he had published at Henares, an edition of the New Testament, in the original tongue. His activity was also displayed in other ways. Dissensions prevailed in the royal family. Philip of Austria, son of the emperor Maximilian I., had married Joanna, the only daughter of Ferdinand the Catholic of Arragon, and of Isabella of Castile. After the death of the latter, Philip received the kingdom of Castile, in right of his wife, the sole heiress of her mother. This gave rise to disputes between him and his father-in-law, which were composed by Ximenes. After Philip's early death (1506), Ferdinand became regent of Castile, for his grandson, afterwards the emperor Charles V., who was a minor. On this occasion he had been much assisted by Ximenes. Ximenes now received from the pope the cardinal's hat, was appointed grand inquisitor of Spain, and had a great share in the affairs of state. But as he knew Ferdinand's jealous disposition, he left the court, and returned to his archbishopric. The conversion of the Moors, and the plan of wresting some provinces from these unbelievers, particularly occupied his attention. With this view, he formed the project of passing over to Africa, in order to take the fortress of Oran, which was in the possession of the Moors. He applied the income of his archbishopric (300,000 ducats), the richest in Europe, to this purpose. A mutiny which arose among a part of his troops, who disliked the idea of having a clergyman for their leader, he suppressed immediately by strict measures. In May, 1509, he landed on the coast of Africa. In the dress of an archbishop, over which he wore a suit of armour, surrounded by priests and monks, as if in a religious procession, he led the land forces. A battle soon followed in the neighbourhood of Oran, in which the Moors were defeated. The fortress was immediately taken, and the garrison put to the sword. Ximenes caused Oran to be fortified anew, changed the mosques into churches, and then returned as a conqueror to Spain, where Ferdinand received him with much pomp. When the latter died, in 1516, his grandson Charles being still a minor, Ximenes became regent of Spain, and effected many important changes during his regency, which continued only two years. He brought the finances into order, paid the crown debts, and restored the royal domains which had been alienated. He humbled the Spanish nobility, who hated him on account of his pride and severity. He caused the laws to be observed, and placed the Spanish military force upon a respectable footing. All his plans and conceptions were great. He possessed great sagacity and firmness, was slow in decision, but quick in execution. The Spanish cabinet was much indebted to him for the consideration in which it was held in Europe for a long time after his death. We have already mentioned that he was a patron of science. He was truly a great man. He has been accused, not entirely without foundation, of pride, severity, and even cruelty; but circumstances sometimes rendered such conduct necessary: his severity was particularly directed against the arrogance of the nobility of the kingdom. Upon various occasions he showed a benevolent spirit. Upon his entrance into Oran, when he saw the numerous corpses of the Moors who had fallen, he shed tears. "They were unbelievers," said he, "but men, who might have been brought to Christ. Their death has deprived me of the principal advantage of this victory." He died in 1517. His life, and his administration, have been the subject of various works.—See *Histoire du Cardinal Ximénes, par Fléchier, Evêque de Nismes* (Amsterdam, 1700), and the *Historie von dem Staatsministerio des Cardinal Ximenes* (Hamburg, 1791).

XIMENES, Augustin Louis, marquis de, a well-known French poet, descended from a family originally Spanish, was born in Paris in 1726. He was a soldier in his youth, and fought at the battle of Fontenai (May 11, 1745). He then became the associate of the most distinguished French *savans* of the eighteenth century, particularly Voltaire. Ximenes wrote some tragedies, among them *Don Carlos;* a poem called *César au Sénat Romain;* and another, in which he illustrates the idea, that the sciences contributed as much to the glory of Louis XIV., as he did to their progress. Two *Discours* of his, one in praise of Voltaire, the other on the influence of Boileau on his century, are esteemed. He also wrote *Lettres sur la Nouvelle Héloïse de J. J. Rousseau.* His works appeared in 1772 and 1792; the later ones under the title of *Codicille*

*d'un Vieillard.* Ximenes was a friend of the revolution, but without passion or selfishness. He took no part in the proceedings, nor did he hold any office. His last work is *Discours au Roi.* He died at Paris in 1817.

XIMENES, LEONARDO; a distinguished mathematician, who died in Florence in 1786, in his sixty-fifth year. He did much for hydraulics and astronomy.

XIPHIAS. See *Sword-Fish.*

XUTHUS; the third son of Hellen and of Orseis. As he was passed over by his father in the partition of his lands, and his brothers expelled him from Thessaly, he went to Attica, where he assisted Erichthens against the Eleusinians, and married his daughter Creusa. But he was driven away again by his brothers-in-law, after he had founded the four cities of Attica. His sons were Achæus and Ion.

XYLOGRAPHY (from ξυλον, wood, and γραφω, I write); a name sometimes given to wood engraving.

# Y

Y; the twenty-fifth letter of the English alphabet, sometimes used as a vowel, sometimes as a consonant. It is a consonant at the beginning of words, in which cases it is produced by the emission of breath, whilst the root of the tongue is brought into contact with the hinder part of the palate, and nearly in the position into which the close *g* brings it, only a greater part of the tongue is pressed against the roof of the mouth. It has, in this case, the same sound with the German *j*, or the *g* in some parts of Germany. The letter *y* is derived from the Greek *υ*, which, however, had a different sound. The Germans have entirely rejected it, except in names of persons. A few persons of the old school continue it, and some use it still in the case of *seyn* (to be), to distinguish that word from *sein* (his); but these are very few, and the distinction is unnecessary, as the context will always show which word is meant. In Spanish, the custom of using *i* instead of *y*, where this letter is a vowel, is becoming more general; thus, *reyno, reynar,* are now giving way to *reino, reinar.* The Romans either retained the Greek *y* in nouns originally Greek, and betraying a Greek origin, as *physica, mythus, synodus, Harpyia, systema, Libya, myrrha, mysterium;* or changed it into a short *u*, or *o*, as in the case of δύο changed into *duo*, μῦς into *mus* (*musculus*), μύκαν into *mugire*, μύλλω, μύλη, into *molo, mola;* or wrote it *i*, as in *inclitus*, and probably pronounced it like the Greek *υ*, or the French *u*, or the German *ü*. Y, as a numeral letter, signifies 150, or, according to Baronius, 159, as in the verse—

*Y dat centenos et quinquaginta novenos.*

Y, on French coins, denotes the mint of Bourges. Y, in its Greek form (Υ), is also called the *Pythagorean* letter, because the Pythagoreans were said to signify by it the proceeding of the *duad* out of the *monad*, or the sacred *triad* (q. v.); according to others, *convalescence* (ὑγιεια), or the dividing road of life. It is also called the *Druid's foot.*—In geography, *Y* is the name of several Chinese towns; also of *Y*, or *Wye*, an arm or inlet of the Zuyder Zee, Netherlands, on the south shore of which Amsterdam is built.—We have known, in Germany, a person whose family name was *Y*, pronounced, as this letter always is in Germany, *ee.*

YACHT; a vessel of state usually employed to convey princes, ambassadors, or other great personages, from one kingdom to another. As the principal design of a yacht is to accommodate the passengers, it is usually fitted with a variety of convenient apartments, with suitable furniture. Private pleasure boats, when sufficiently large for a sea voyage, are also termed *yachts;* they are rigged in various manners.

YADKIN. See *Pedee.*

YAKOUTSK, OR JAKUTSK; a town in Siberia, capital of a province of the same name, situated on the Lena; lat. 62° 2′ N.; lon. 130° E.; population, about 7000. Yakoutsk lies in a plain, surrounded with mountains, and is the emporium of the northern fur trade, and an important entrepot of Russian and Chinese goods. Furs, corn, wine and salt are brought from Irkoutsk and Ilimsk by the Lena, and wines from Archangel. The cold is so excessive here in winter, that mercury freezes.

The province of *Yakoutsk* was formed in 1823, of a part of the government of Irkutsk. It borders on the Frozen ocean on the north, and the Chinese territories on the south, extending from 53° 15′ to 76° 15′ N. lat., and from 104° to 163° E. lon., and covering a superficial area of nearly 1,500,000 square miles, with a population of 140,000 souls. A great part of this extensive region is sterile and desolate. The inhabitants, who are chiefly Yakoutes and Tunguses, live principally by the chase, fishing, or the raising of reindeer, which animal they employ, like the Laplanders, in dragging their sledges, similar to that represented below. Far to the

north, they dwindle into a poor and stunted race. Their vegetable food consists of various roots, as

onions, garlic, and berrics. They are extremely superstitious. They reckon a number of evil spirits, with the dread of which they are perpetually haunted; and the influence of their magicians or priests over them is unbounded.

YAM (*dioscorea sativa*); a slender herbaceous vine, having large tuberous roots, which are much used for food in Africa and the East and West Indies. They are mealy, and esteemed to be easy of digestion, are palatable, and not inferior to any roots now in use, either for delicacy of flavour or nutriment. They are eaten either roasted or boiled, and the flour is also made into bread and puddings. The juice of the roots, when fresh, is acid, and excites an itching on the skin. There are many varieties of the roots; some spreading out like the fingers: others twisted like a serpent; others, again, very small, scarcely weighing more than a pound, with a whitish, ash-coloured bark, whereas the bark is usually black. The flesh of the yam is white or purplish, and viscid, but becomes farinaceous or mealy when cooked.

*D. aculeata*, by some considered only an improved variety of the preceding, is universally cultivated in the East and West Indies, in Africa, and in all the islands of the Pacific. The roots are frequently three feet long, and weigh thirty pounds. All the varieties are propagated like the potato, but they arrive much sooner at maturity. The buds of the roots are not apparent; but still a small piece of skin is left to each set; for from this piece of bark, alone, the shoots proceed. Holes are made in rows two feet apart, and eighteen inches distant in the row: into these holes two or three sets are put, first covered with earth, and then with a little haum or rubbish, to retain moisture. The only after-culture consists in hoeing up the weeds. They are commonly planted in August, and are ripe about the November or December following. When dug up, the greatest care is taken not to wound them, as that occasions them to sprout much earlier than they would otherwise. An acre of ground has been known to produce from twenty to thirty thousand pounds weight. The species of *dioscorea* are all vines, bearing, usually, heart-shaped and strongly-nerved leaves, and inconspicuous flowers.

YANG-TSE-KIAN, OR KIAN-KU; a river of Asia, which rises in the mountains of Thibet, and, after crossing the empire of China, from west to east, with a course of about 2400 miles, passing by the great city of Nanking, empties itself into the sea, 120 east of Nanking. It is the largest river in China, and reputed the largest in Asia. It changes its name in almost every province through which it passes.

YANINA. See *Joannina*.

YANKEE, as Heckewelder says, is probably a corrupt Indian pronunciation of the word *English*, whom the Indians called *Yengeese*. They distinguished them from the Virginians, or Southern people, whom they called *Long Knives*.

*Yankee-Doodle*. In the early part of 1755, great exertions were made by the British ministry for the reduction of the French power in the Canadas. General Amherst was appointed to the command of the British army in the North Western America; and the British colonies in America were called upon for assistance, who contributed with alacrity their several quotas of men. The British army lay encamped, in the summer of 1755, on the eastern bank of the Hudson, a little south of the city of Albany. In the early part of June, the eastern troops began to pour in. Their march, their accoutrements, and the whole arrangement of their troops, furnished matter of amusement to the wits of the British army. The music played the airs of two centuries old. A physician of the British army, by the name of doctor Shackburg, to please brother Jonathan, composed a tune, and recommended it to the officers as a celebrated air. The joke took, and in a few days nothing was heard in the provincial camp but the air of *Yankee Doodle*. The tune has since been adopted as the national air of the United States—a distinction to which its intrinsic merits certainly do not entitle it, being, as a piece of music, the merest doggrel. When contrasted, as it often is at sea, with the national air of "Rule, Britannia," the original meanness of "Yankee Doodle" becomes strikingly apparent.

YARD; a long piece of timber suspended upon the mast of a vessel to extend the sail of the wind. See *Ship*.

*Yard-arm* is that half of the yard that is on either side of the mast when the yard lies athwart the ship.

*Yard-arm and Yard-arm;* a phrase applied to two ships when they are so near that their yard-arms nearly touch each other.

YARD MEASURE. See *Measures*.

YARKAND, OR YARCUND. See *Bucharia, Little*.

YARMOUTH, OR GREAT YARMOUTH; a borough town of England, in the county of Norfolk, 22 miles east by south of Norwich, and 124 north-east of London. It is in the form of an oblong quadrangle, having the sea on the east, and on the west the Yare, over which there is a bridge. It contains four principal streets, running parallel, which are crossed, at right angles, by 156 narrower ones, denominated *rows*, and is flanked by a wall on the east, north and south sides. The quay of Yarmouth is considered equal to that of Marseilles, and has no superior in Europe, except that at Seville, in Spain. Its length is one mile and 270 yards: in many places it is 150 yards broad; and part of the line is decorated with handsome buildings. Yarmouth has long been much frequented as a fashionable watering-place, and furnishes every accommodation for the health, comfort and amusement of its visitors. It has a theatre, fisherman's hospital, hospital school, town-house, &c. The harbour was executed under the direction of Joas Johnson, a Dutchman, who was brought from Holland to conduct the work. The extent of the haven, between the north and south piers, is 1111 yards. During the late wars, the importance of Yarmouth was greatly increased, owing to its being a grand station for part of the British navy; the roads opposite the town affording safe anchorage for a numerous fleet. The harbour is perfectly secure against every danger, but the coast is the most dangerous in Britain, and has been often the scene of the most melancholy shipwrecks. This place is advantageously situated for commerce, particularly to the north of Europe. Yarmouth is actively engaged in the herring fishery, and has a considerable coal trade. It is defended by three forts, which were erected on the verge of the beach, during the American war, and mounted with thirty-two pounders. An armoury has been erected under the direction of Mr Wyatt. It returns two members to parliament, chosen by the burgesses at large. Population, in 1841, 27,550.

YARMOUTH, OR SOUTH YARMOUTH, a

seaport and borough in the Isle of Wight, situated at the eastern point of the mouth of the river Yar, from which the name is derived, and directly opposite to the town of Lymington, with which there is a constant communication. The town consists of several well-built streets, the houses having a very neat appearance, from being constructed with freestone. The market-house, a plain substantial building, has an upper apartment, appropriated for the uses of the corporation and all public business; baths, with every convenience, have recently been established. Yarmouth has several times suffered severely by the attacks of the French; and in the reign of Richard II. they entirely destroyed it by fire, having first pillaged it. The trade of this place is not extensive, the chief article of exportation being a fine white sand obtained here, used in making glass and earthenware; the imports, coals and timber. It formerly sent two members to parliament, but was disfranchised in 1832. Population, in 1831, 586; in 1841, 567.

YARROW, OR MILFOIL (*Achillea millefolium*); a weed, distinguished by the excessively dissected leaves; hence the name, which signifies *a thousand leaves*. The flowers are small, white, and disposed in a terminal corymb. The whole plant has a strong and disagreeable odour.

YARROW; a celebrated pastoral stream of Scotland, in Selkirkshire, which rises at a place called *Yarrow Cleugh*, and, running east a few miles, forms a beautiful lake, called the *loch of the Lows*, which discharges its waters into St Mary's loch. Issuing from the latter, the river, after a course of about sixteen miles through the ancient district of Ettrick forest, joins its waters to those of the Ettrick, two miles above Selkirk. Near Newark castle, it forms highly romantic and picturesque scenery.

The *parish* of Yarrow is eighteen miles in length, and sixteen at its greatest breadth. It is estimated to contain 60,000 acres, and, by the census of 1841, had a population of 1264 inhabitants. Of this extensive district the ancient parish of Duchoire forms the eastern portion, that of Kirkhope the south-eastern, and that of St Mary (annexed at the reformation) the western. The surface is mountainous, but interspersed with fertile valleys, which, with some of the declivities, are cultivated, though the prevailing employment of the inhabitants is in rearing sheep, of which there are usually from 50,000 to 60,000 upon the hills. The view on every side is broken by lofty mountains, and of these the range termed the Black-house Heights, rises in considerable grandeur to an elevation of 2370 feet above the level of the sea; whilst the windings of the Ettrick and the Yarrow, contribute to enhance the romantic beauty of the scenery. Though now quite destitute of natural wood, this district still retains the ancient appellation of Ettrick Forest, the remains of which, principally oak, lie hidden in the mosses; there are, however, at Hanging Shaw, a venerable but ruinous seat of the Murrays, as well as upon several farms, some flourishing and very extensive plantations. The present church was erected in 1640, on a more central situation than St Mary's, the ancient parish church, but the old cemetery of the latter is still used. Vestiges of numerous feudal castles and mansions are discernable; and on the summit of Kersope Hill stood a monument, termed Tait's Cross, but the purpose for which it was erected is unknown. It is recorded that on and near its site, in 1722, were seen at one view more than 12,000 ewes folded and milked. Between Yarrow-kirk and St Mary's loch, stands Mount Benger, the residence of the late James Hogg, whose poetical genius has thrown an additional charm over a district already celebrated in song. Some of the finest verses he ever wrote were composed on the ancient cemetery of St Mary's kirk. We are tempted to extract a few.

O lone St Mary of the waves,
In ruin lies thine ancient aisle,
While o'er thy green and lowly graves,
The moorcocks bay, and plovers wail;
But mountain spirits on the gale
Oft o'er thee sound the requiem dread,
And warrior shades, and spectres pale,
Still linger by the quiet dead.

Yes, many a chief of ancient days
Sleeps in thy cold and hallow'd soil,
Hearts that would thread the forest maze,
Alike for spousal or for spoil,
That wist not, ween'd not, to recoil
Before the might of mortal foe,
But thirsted for the Border broil,
The shout, the clang, the overthrow!

Here lie those who, o'er flood and field,
Were hunted as the osprey's brood,
Who braved the power of man, and seal'd
Their testimonies with their blood:
But long as waves that wilder'd flood,
Their sacred memory shall be dear,
And all the virtuous and the good
O'er their low graves shall drop the tear.

Here sleeps the last of all the race
Of these old heroes of the hill,
Stern as the storm in heart and face;
Gainsaid in faith or principle,
Then would the fire of heaven fill
The orbit of his faded eye;
Yet all within was kindness still,
Benevolence and simplicity.

Here lie old Border bowmen good;
Ranger and stalker sleep together,
Who for the red-deer's stately brood
Watch'd, in despite of want and weather,
Beneath the hoary hills of heather:
Even Scotts, and Kerrs, and Pringles, blended
In peaceful slumbers, rest together,
Whose fathers there to death contended.

Here lie the peaceful, simple race,
The first old tenants of the wild,
Who stored the mountains of the chase
With flocks and herds—whose manners mild
Changed the baronial castles, piled
In every glen, into the cot,
And the rude mountaineer beguiled,
Indignant, to his peaceful lot.

Here rural beauty low reposes,
The blushing cheek and beaming eye,
The dimpling smile, the lip of roses,
Attractors of the burning sigh,
And love's delicious pangs, that lie
Enswathed in pleasure's mellow mine:
Maid, lover, parent, low and high,
Are mingled in thy lonely shrine.

Dryhope castle, a ruin near the eastern extremity of St Mary's loch, was the residence of Mary Scott, the flower o' Yarrow, renowned in song, and who having been married to Elliot of Minto, became the ancestress of the lady who wrote "the Flowers of the Forest." It is singular, indeed, the number of poetical associations with which this district is connected. "The Song of the Outlaw Murray," the "Douglas Tragedie," and the oldest verses to the "Yellow-haired laddie," all belong to these scenes. But the best known of the ancient ballads is "The Dowie Dens of Yarrow," which is supposed to have suggested to Hamilton of Bangour the more modern song beginning, "Busk ye, busk ye, my bonnie bride." Hence, also, the plaintive strain of Logan, "Thy braes were bonnie, Yarrow stream," &c., and Wordsworth's fine effusions, "Yarrow Unvisited," "Yarrow Visited," and "Yarrow Revisited."

YAWL. See *Boat*.

YAWNING, OR GAPING; an involuntary opening of the mouth, generally produced by weariness or an inclination to sleep, sometimes by hunger, sympathy, &c. It often precedes the fit in some intermittent fevers, and, in some instances, by the frequency of its recurrence, becomes a real disease. It is supposed to be determined by an interruption of the pulmonary circulation. Yawning, according to Boerhaave, is performed by expanding at one and the same time all the muscles capable of spontaneous motion, by extending the lungs, by drawing in, gradually and slowly, a large quantity of air, and gradually and slowly expiring it after it has been retained for some time, and then restoring the muscles to their natural state. Hence the effect of yawning is to move, accelerate, and equally distribute all the humours through all the vessels of the body, and, consequently, to qualify the muscles and organs of sensation for their various functions. When yawning is troublesome, long, deep respiration, or drawing in the air at long intervals, relieves it.

YAZOO; a river of Mississippi, which rises in lat. 35° N., near the borders of Tennessee, and runs south-south-west into the Mississippi, which it meets twelve miles above Walnut hills, 142 miles above Natchez. It is 230 miles long, and navigable 100 miles.

YAZOO LANDS. See *Georgia*.

YEAR; the period in which the revolution of the earth round the sun, and the accompanying changes in the order of nature, are completed. In ancient times, when it was thought that the sun moved round the earth, this period was called the *solar* year. The accurate determination of the solar year, which required great knowledge of astronomy and exact observations, could only be reached by the successive efforts of many generations. According to Herodotus, the Egyptians were the first who approximated to the true length of the solar year. They divided it into twelve months, and each month into thirty days, so that their year consisted of 360 days; and the inhabitants of Thebes, who did not take into consideration the course of the moon, added five days. They afterwards remarked that the dog-star (Sirius), whose appearance just before sunrise denoted the overflowing of the Nile, became visible one day later every four years; but the year of 365 days was so intimately connected with their festivals, that a change could not be made without the greatest difficulty; and, although the festivals occurred later and later, yet the mode of reckoning remained the same until the Romans became masters of Egypt, when the calendar of Julius Cæsar was introduced. In Greece, the year was more correctly divided into $365\frac{1}{4}$ days; and the Grecian astronomer Sosigenes made this the basis of the Julian calendar. (See *Calendar*.) But the astronomer Hipparchus of Alexandria, about 150 years before Christ, found, by observation, that the solar year contained only 365*d*. 5*h*. 55′. His improvements, however, were not adopted. Later observations have shown that the true year is about 11′ 15″ shorter than the Julian year. Lalande made it 365*d*. 5*h*. 48′ 35′ 30″; Zach, 365*d*. 5*h*. 48′ 48·016″. This period, so accurately determined, is called the *astronomical* year, from which the civil year of the calendar must necessarily differ. As the civil year cannot divide the days, it only reckons 365 in the year, and therefore does not fully agree with the astronomical. On account of the remaining 5*h*. 48″, &c., every four years a day is added to the month of February; and the year which thus consists of 366 days is called *leap* year. By the *lunar* year is meant the time required for twelve revolutions of the moon, which is, according to Lalande, 354*d*. 8*h*. 48′ 37″, making the lunar year 10*d*. 21*h*. shorter than the solar. Many nations of antiquity reckoned by the lunar year. A year is said to be *fixed*, if the equinoxes and seasons come on fixed days; but if they advance, the year is called *changeable*. Thus the Julian year is changeable; the Gregorian fixed. It is necessary to observe the difference between the tropical, sidereal and anomalistic year. The astronomical year is also called *tropical*, because its duration depends on the return of the sun to the equinoxes or the tropics. This differs from the sidereal year (the time required by the sun to complete a revolution with regard to a particular star), which is longer by 20′ 5.7″; and the anomalistic year is 26′ longer than the tropical, and is the time required by the sun to complete a revolution with regard to its apogee. The year of the Jews consisted of twelve months, which were divided alternately into twenty-nine and thirty days. A whole month was inserted in their leap year, between the sixth and seventh month. Their new-year's day was the day of the first new moon after the autumnal equinox. In the period of nineteen years, by which they reckoned, they had seven leap years, namely, the third, sixth, eighth, eleventh, fourteenth, seventeenth, and nineteenth. Among the Persians, the sultan Gelal (A. D. 1079), introduced a year which more nearly agrees with the astronomical than the Gregorian year does. According to his arrangement, a leap year occurs once in four years seventimes in succession; the eighth leap year, however, does not take place till after a lapse of five years. During the time of the French republic, a year was invented also more exact than the Gregorian. A period of 86,400 years requires 20,929 leap years; therefore a day was to be inserted at the end of the year as often as the autumnal equinox would fall on the second day of the new year. For further information, see *Calendar*.

YEAST is the barm or froth which rises in beer and other malt liquors during a state of fermentation. When thrown up by a quantity of malt or vinous liquid, it may be preserved to be put into another at a future period, on which it will exert a similar fermentative action. Yeast is likewise used in the making of bread, which, without such an addition, would be heavy and unwholesome.

YEDDO. See *Jeddo*.

YELL; one of the Shetland islands, the next largest of the group to Mainland, from which it is separated by Yell Sound, as it is from Unst by the strait of Blommel, and from Fetlar by Colgrave Sound. It is about twenty miles in length, and from six to twelve in breadth, exhibiting a tolerably level surface, but a bold and rugged coast, indented by many bays or voes, of which Bura, Hamma, Refirth, and Whalfirth are the principal, and form secure harbours. There are a few small patches of arable land near the shore, but the interior affords only a coarse pasturage for sheep and cattle, and a plentiful supply of peats, in procuring which large trees are frequently discovered in the mosses, though scarcely a shrub is now to be seen upon the surface. The island was formerly divided into three parishes, North Yell, now in union with the isle and parish of Fetlar, South Yell, and Mid Yell, which are also united. There are two churches.

The inhabitants are principally employed in the fisheries; those who work in the fields use a kind of spade instead of a plough, and as the men dig, their wives and children drag the harrows. Population of North Yell and Fetlar, in 1841, 1745; of South and Mid Yell, 1705.

YELLOW BIRD, OR AMERICAN GOLDFINCH (*fringilla tristis*, L.), is not less than five inches in length; of a rich lemon-yellow; the crown, wings, and tail black; bills and legs pale reddish yellow; tail handsomely forked. The female and young are of a brown olive colour; beneath, yellowish-white. In September, the dress of the male becomes nearly similar to that of the female. This common, active and gregarious goldfinch is a very general inhabitant of the United States. In summer, it is also to be met with in Canada, as far north as lake Winnipec, in lat. 49°. It is also met with in Mexico, and even Guiana and Surinam. Its migrations are very desultory, and probably do not proceed very far, its progress being apparently governed principally by the scarcity or abundance of food. As the fine weather of spring approaches, the males put off their humble winter dress, and now appearing in their temporary golden livery, are heard tuning their lively songs as if in concert, several sitting on the same tree. In cages to which they soon become reconciled, their song is nearly as animated and sonorous as that of the canary. They raise sometimes two broods in the season. The nests are often built in tall young forest trees, or lofty bushes. See Nuttall's *Ornithology of the United States and of Canada.*

YELLOW, NAPLES. See *Naples Yellow.*

YELLOWSTONE, one of the largest branches of the Missouri river, rises from lake Eustis, in the Rocky mountains, near the source of Lewis's river, which flows into the Oregon. Lake Eustis is about lat. 43° 20′ N. The Yellowstone runs E.N.E. 1100 miles, and joins the Missouri 1880 miles from the Mississippi; lon. 104° W.; lat. 47° 50′ N. This river is nearly or quite as large as the other branch, which retains the name Missouri. The Big Horn, its great southern branch, and the Del Norte and Lewis's river, are all said to have their sources near the same spot, in about lat. 43°. Captain Clarke, the associate of captain Lewis, descended this river while returning from the Pacific ocean. During its whole course from the point at which he reached it to the Missouri, a distance which he computed at 837 miles, it is navigable for batteaux. Its navigation is impeded by only one ledge of rocks; and this may be passed without difficulty. The banks of the river are low, but not subject to be overflowed, except at a short distance below the mountains. The colour of the river is of a yellowish-brown, and its bed is chiefly composed of loose pebbles. The river flows with a velocity gradually diminishing in proportion to its distance from the mountains. The first part of its course, it moves four or five miles an hour; the latter part not more than two. In the upper part of its course, the country consists of high, waving plains, bordered by stony hills, partially supplied with pine; towards the Missouri, the country contains less timber, and spreads into extensive plains. Much of the land bordering on it is fertile. It abounds with beaver and otter, and along its banks are immense herds of elks, buffaloes and deer. The width of its bed, at its confluence with the Missouri, is 850 feet. When measured by Lewis and Clarke, the stream was 297 yards wide, and the deepest part of the channel was twelve feet. The river had then fallen to its summer level.

YELLOW FEVER. See *Fever.*

YELLOW WEED. See *Wold.*

YEMEN. See *Arabia.*

YENITE (*lievrite*) occurs in prismatic crystals, whose primary form is a right rhombic prism of about 111° 30′. Cleavage takes place parallel to the longer diagonal of this prism. Colour black, or greenish-black; lustre submetallic, brilliant, or dull; opaque; hardness nearly equal to feldspar; specific gravity 3·8 to 4·1. The crystals are sometimes terminated, at one or both extremities, by four-sided pyramids, and vary from one inch in diameter to acicular. They are often much interlaced.

It also occurs columnar and massive. On charcoal it fuses, before the blow-pipe, into a black, shining globule, attractable by the magnet. With borax it readily forms a dark and almost opaque glass. It consists of

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| Silex, | 29·778 |
| Lime, | 13·779 |
| Alumine, | 0·614 |
| Oxide of manganese, | 1·587 |
| Oxide of iron, | 53·47 |
| Water, | 1·26 |

It is a rare mineral, having been found only, in good specimens, at Rio la Marina and cape Calmite, in Elba, where it occurs dispersed in crystals and rounded massive balls, in a thick bed of blackish-green augite. It has also been found in the United States, at Cumberland in Rhode Island.

YEOMEN OF THE GUARD; a sort of foot guards, who attend the royal palace. The Yeomen were uniformly required to be six feet high. They are in number one hundred on constant duty, and seventy off duty. The one half carry arquebuses, and the other partisans. Their attendance is confined to the sovereign's person, both at home and abroad. They are clad after the manner of king Henry VIII.

YEOVIL; a market town in Somersetshire, which derives its name from the river Yeo or Ivel, on the banks of which it is situated, 122 miles W.S.W. from London. This place was formerly famous for its woollen manufacture, which has been superseded by that of gloves, chiefly of the finer kinds for ladies, made here at one period in great quantities; but this manufacture has suffered recently, from the introduction into use of French gloves, or from other causes. From the surrounding country abundance of butter, cheese, corn, and other articles of produce are sent to the markets for sale; and much butter especially is purchased, to be transmitted to the metropolis, where it is known by the appellation of Dorset butter. Population in 1841, 6302.

YERMOLOFF. See *Jermoloff.*

YESD, OR YEZD, OR YEYD; a town in Persia, in Irak, on the borders of Segestan and Kerman, 190 miles east of Ispahan, 210 north-east of Schiras; lon. 56° E.; lat. 31° 57′ N. It contains according to Malte-Brun and Hassel, 4500 houses, according to the Edinburgh Gazetteer, 24,000 houses, of which 4000 are occupied by Guebres. It is situated on the borders of a sandy desert, contiguous to a range of lofty mountains. It is a great emporium of the trade between Hindoostan, Bukharia and Persia. The environs produce excellent pomegranates and grapes. The chief manufactures are silk stuffs and carpets. In 1396, this town was taken by Timur Bec, after a siege in which it was stated 30,000 persons died of famine.

YEW (*taxus baccata*); an ever-green tree, belonging to the family of the pines, which is common in many parts of the north of Europe. The foliage somewhat resembles that of the hemlock spruce, except that the leaves are larger; the fruit, however, is not a cone, but a small red berry, in the hollow part of the extremity of which a green seed appears. The yew was formerly extensively cultivated in Great Britain, and on account of its gloomy and funereal aspect, was usually planted in church-yards. The wood, which is peculiarly hard, smooth, and tough, was manufactured into bows; but, since the introduction of fire-arms, the tree is no longer planted except for ornament. In the formal style of gardening which was once prevalent, few trees were more the subject of admiration, from its bearing to be clipped, without injury, into almost any form. Yews were cut into the shape of men, quadrupeds, birds, ships, &c. The wood is hard, beautifully veined, and susceptible of a very high polish; hence it is valuable for veneering and other cabinet work, and is in frequent use. From its hardness and durability, it may be made into cogs for mill-wheels, axletrees, and flood-gates, which scarcely ever decay. The leaves are extremely poisonous, both to men and cattle.

A species of yew (*T. Canadensis*) is found in Canada and the extreme northern parts of the United States. It is a low, prostrate shrub, commonly called the *ground hemlock*, and, indeed, is not distinguished by many from that tree.

YEZDEGIRD, Era of. See *Epoch*.

YNCA. See *Inca*.

YONNE; a department of France, about seventy miles in length, and from thirty to forty in breadth. See *Department*.

YORK; an ancient city of England, the capital of Yorkshire, is situated in the East Riding, on the banks of the Ouse, 196 miles north-north-west from London. The Romans established a station or settlement here, which probably derived its name from the river on the banks of which it was placed, now the Ouse or Oose, but anciently the Oure or Oore, a sound which seems evidently to be present in Eb-*or*-acum, the Latinized form used by the Romans. The *orac* of Eboracum again is no doubt the origin of the modern York. The Roman emperors who visited this country for the most part took up their residence at York. Here the emperor Severus died in the year 211, after having made York his head-quarters during the three or four preceding years which he spent in the island. Three remarkable mounts, a little west from the city, still bear the name of the Hills of Severus: and many other remains that have been discovered in later ages attest the Roman domination. After the establishment of the Saxon Heptarchy, York became the capital of the kingdom of Northumberland. Although, on the arrival of the Normans, this district, like the rest of the kingdom, quietly submitted in the first instance to the invaders, it was the scene on which, soon afterwards, a struggle was made by a powerful confederacy of Saxon lords and their retainers to regain their independence. This insurrection, however, was soon crushed by the activity and energy of the conqueror, who, laying siege to York, starved it into a surrender in six months, and then, after his usual fashion, erected a fortress in the close neighbourhood of the town, to keep it for the future in awe. This was the origin of the present castle, situated at the southern extremity of the city, in the angle formed by the confluence of the two rivers. At a little distance is a ruin called Clifford's Tower, which was the keep of the old castle, and took its name from the Cliffords, whom William appointed the first governors of that stronghold. In early times parliaments were frequently held at York; and in 1299, Edward I. even removed the courts of law from London to this city, where they continued to sit for seven years.

The city of York stands in the midst of an extensive plain, the largest in Great Britain. Viewed from the immediate neighbourhood, the peculiarity which most strikes the eye is the ancient wall by which it is encompassed,—supposed to have been built by Edward I., about 1280, on the line of the old Roman fortification. This wall, which had fallen greatly into decay, never having recovered from the damage it sustained when the city was besieged by Sir Thomas Fairfax and General Lesley, in 1644, has been lately repaired, and a walk is now formed along the top of part of it, which is a favourite resort of the inhabitants.

The ancient gates of York are four in number, namely, Micklegate Bar to the south-west, over the entry from London; Walmgate Bar to the south-east, Monk Bar to the north-east, and Bootham Bar to the north-west, facing the great road from Scotland. All these structures are at least as old as the thirteenth century; and the inner arch of the Micklegate Bar, which is a portion of a circle, has been supposed to be of the Roman times. Besides the four principal gates, there were formerly also five posterns, or smaller and more private entrances; but two of them, the Skeldergate and Castlegate posterns, have, within these few years, been taken down.

The entire circuit of the walls of York is about three miles and three-quarters, being somewhat less than that of the walls of the city of London. The space within, however, is much less densely occupied by streets and houses than it is in London. The streets of York used formerly to be for the most part extremely narrow—many of the houses being built of wood, and, according to the common fashion of that style of architecture, often overhanging the road below with their upper stories. Many of these ancient edifices, however, have been taken down of late years, and the principal streets widened and otherwise improved.

Among the most important of the recent alterations and repairs which have taken place in York, are to be reckoned those connected with the two rivers on the banks of which it stands. The Foss has been changed from little better than a stagnant ditch, into a clear and ornamental stream; and the navigation of the Ouse, which had been long neglected, has also been greatly improved since the commencement of the present century. New bridges have likewise been thrown over both rivers; that over the Foss being a single arch, and that over the Ouse consisting of three elliptical arches, of which the centre one is seventy-five, and each of the others sixty-five feet in span. The old bridge which crossed the Foss, was erected about the beginning of the fifteenth century, that of the Ouse is supposed to have been built at the expense of the archbishop Walter Grey, about the year 1235. It consisted of five pointed arches, as it may be seen depicted in "Drake's Antiquities of the city of York." The centre arch was supposed to be the largest in Europe, with the exception of

that of the Rialto, at Venice. A gravelled walk was some years ago formed for about a mile along the left bank of the river, immediately to the south of the bridge, which, being now shaded with lofty elms, and having become a fashionable promenade, is one of the greatest ornaments of the city.

The most prominent feature in York is its noble cathedral or minster, a description of which we shall give at the end of this article. Next to the Minster, York castle and Clifford's tower claim attention. The castle of York, now the county jail, stands at the distance of about 200 yards from the eastern bank of the Ouse, and close to the Foss, which being brought round it in a deep moat or ditch, renders it inaccessible, except from the city, on the north. Historical evidence sufficiently proves that before the Norman conquest, York had a castle, which Drake, in his "Eboracum," supposes to have been the Old Baile, on the opposite side of the Ouse. The castle on the present site, according to the opinion of the same author, was built by William the Conqueror, but probably on a Roman foundation. Having fallen to decay, it was repaired, or rebuilt, in the reign of Richard III. After it was no longer used as a fortress, it was converted into a county prison; but, having fallen into a ruinous state from age, it was taken down in the year 1701, and in its stead, a structure was erected which was long considered to form one of the best regulated and most commodious prisons in the kingdom. However, in 1826, new buildings were commenced under the direction of Mr Robinson, architect. The plan of the new portion of the prison is upon the radiated and panopticon system, the governor's house forming a centre from which all the prisons and airing courts diverge. The governor and turnkeys can pass unseen from the centre to any part of the prison, through secret passages in each of the buildings, connected with a corridor of inspection which surrounds and connects the whole. From these passages, too, every thing that passes within the prisons can be seen; and as the prisoners know this, they have a right to suppose that the governor's eye is always upon them.

The prison is fire-proof, the structure being entirely of stone; the walls are 5 feet thick below, and 3 feet above, and no timber is used in the floors, the stone extending from wall to wall. Each cell of the prison is covered with a single piece of stone 5 inches thick, and the cells are divided laterally by single stones 9 inches thick. The doors are of hammered iron, and three iron guards are placed in each aperture in the thickness of the wall. The boundary wall surrounding the new prison, the old debtor's prison, and the court-house is 35 feet in height above the ground, and it has towers at intervals to strengthen it. This wall is 1350 feet in length, and is, in itself, a specimen of very superior workmanship. Upon the whole, York castle may be considered the strongest prison in England, and it is certainly one of the most complete and efficient.

In all the alterations which have taken place, "Clifford's Tower," which stands within the walls, has been preserved with the most scrupulous care. A short distance within the gateway there is a high mound, thrown up with prodigious labour, and surrounded by a strong stone wall. It appears to be elevated at least ninety feet above the level of the Ouse, and thirty feet above the site of the castle or gaol, and the adjacent parts of the city. On the summit of this mount stands an ancient tower, called "Clifford's Tower;" and, according to tradition, one of that family was its first governor, after it had been built by the Conqueror for the purpose of overawing the city and country. The castle itself was found by Leland in a ruinous state in the time of Henry VIII. But on the commencement of the civil wars between Charles I. and the Parliament, it was completely repaired and fortified by order of the earl of Cumberland, the governor of York. On the top of the tower was made a platform, on which several pieces were mounted: a garrison was appointed for its defence, and colonel Sir Francis Cob was its governor during the siege of the city. After the surrender of York, in 1644, it was dismantled of its garrison, except this tower, of which Thomas Dickenson, the lord-mayor, a man strongly attached to the cause of the Parliament, was constituted governor. It continued in the hands of his successors, as governors, till 1683, when Sir John Reresby was appointed to that office by Charles II. In the following year, 1684, on the festival of St George, about 10 o'clock in the evening, the magazine took fire and blew up, and the tower was reduced to a shell, as it remains at this day. Whether this happened accidentally or by design was never ascertained.

The other principal public buildings of York, are the mansion house, an elegant structure, erected in 1725; the guildhall, which dates from the middle of the fifteenth century, and is one of the finest Gothic rooms in England, being ninety-six feet in length by forty-three in breadth and twenty-nine and a half in height; the council chamber, built in 1819; the assembly rooms, built in 1730; the theatre, first opened in 1769, and thoroughly repaired in 1822; the museum of the Yorkshire philosophical society, opened in Feb. 1830; together with the county lunatic asylum, the establishment of the same kind belonging to the Society of Friends called the Retreat, the county hospital, &c. The archbishop of York has no house in the city, the only residence attached to the see being the palace at Bishopsthorpe, which stands on the west bank of the Ouse, about three miles farther down the river.

The Ouse flows through the city of York, the principal part of which, however, stands on the left or east bank of the river, immediately above its junction with the smaller stream called the Foss. Vessels of ninety tons burden can still ascend the Ouse as far as York; but in former times that city used to be accounted one of the chief marts of foreign commerce in the kingdom. From the foundation, however, of the port of Hull by Edward I. towards the close of the thirteenth century, the trade and commercial importance of York began rapidly to decline. The manufactures of the city are not very considerable, consisting principally of linen cloth and gloves: there are also iron and brass founderies, tobacco pipe makers, flax-dressers, sacking and sailcloth manufacturers, rope and twine makers, mustard manufacturers, comb makers, white and red-lead manufacturers, and coach, lace, and fringe manufacturers. A great part of the trade arises from the demands of the local population; and great quantities of coal are brought hither by water. Large sales of cattle and horses take place once a-fortnight, and at the annual fairs; and a market for leather is held once a-month; corn, flax, and wool are also extensively sold, at several of the fairs. Population of the city in 1821, 20,787; in 1831, 25,359; in 1841, 30,152.

*York Cathedral* or *Minster*. York was made the see of a bishop under Paulinus, who converted the Northumbrians to Christianity in 627; but this prelate was obliged to abandon his station, in consequence of the wars with the Britons and Mercians, which proved fatal to his royal patron Edwin. The see, however, was ere long restored; and while it was held by the famous Wilfred, disputes for the dignity of primate of the whole kingdom, occasioned a quarrel with Theodore, archbishop of Canterbury, and Wilfred was deprived of his episcopal authority, which however, he afterwards recovered. The contest was continued by successive archbishops of York and Canterbury, but it was at length terminated in favour of the latter, who acquired the title of primate of All England, while the archbishop of York was permitted to assume the title of primate of England. This metropolitan is always lord high almoner to the king, and ranks above all dukes not of the royal family, and all the great officers of state except the lord chancellor. The archiepiscopal establishment is composed of the archbishop, the dean, and the subdean, four archdeacons, a chancellor, a precentor, a succentor, a registrar, four canons residentiary, twenty-four prebendaries, a chancellor of the diocese, and various inferior officers; all which, with the chancellorship of the diocese and registrary, are in the patronage of the archbishop. The prebends are likewise in the same patronage; and on a vacancy in the chapter, the dean appoints a residentiary from among the prebendaries of the cathedral. The cathedral church, a most magnificent structure, dedicated to St Peter, was erected principally in the thirteenth and fourteenth centuries. The building having been destroyed by fire in the reign of king Stephen, it was partly re-erected by archbishop Roger, about 1170; but the principal part of the existing structure was built in the reign of Edward I., the nave being begun at that period, and it was finished about 1330, by archbishop Melton, who also erected the west front and angular towers. Archbishop Thoresby rebuilt the choir. He commenced this great work in 1375; but it is not perfectly certain when it was finished, some parts of the choir exhibiting the arms of archbishops Scrope and Bowet, Thorseby's successors, the latter of whom succeeded to the see in 1405. Meanwhile, it had also been resolved to take down the central steeple erected by John le Romayne; and in its place the present lantern tower was begun to be built in 1370. The whole was probably finished and the Minster brought to the state in which we now see it, about 1410 or 1412.

From this account it appears that the successive parts of the building, in the order of their antiquity, are the south transept, the north transept, the nave, the central tower, and, lastly, the choir, proceeding from the west end to the east. Reviewed in this order, the cathedral of York forms a most interesting and instructive architectural study. It is perhaps the most perfect example to be any where found of the history and progress of the Gothic style during the period of not much less than two centuries, which its construction occupied. In this place we can only remark generally, that a continued and regular improvement in grace and lightness of form, and a more and more lavish profusion of minute and elaborate ornament, will be found to form the leading characteristics of that progress in England, during the whole of the period in question.

York Minster, as may be understood from what has been already stated, is built in the form of a cross, the longer bar forming the choir and nave of the church, lying, as usual, east and west, and the shorter, called the transept, north and south. Over the centre of the building, supported on four massive pillars, rises a grand tower to the height of 213 feet from the floor. This is said to be only a portion of the altitude originally designed by the architect, who intended to surmount this stone erection by a steeple of wood covered with lead, had he not been deterred by a fear lest the foundation should prove insufficient to sustain so great a weight. Over the west end of the building are two other towers or steeples rising to the height of 196 feet. The whole length of the building, from east to west is 524½ feet, and that of the transept, from north to south, 222. The length of the choir is 157½ feet, and its breadth 46½; in addition to which the east end of the choir contains a chapel behind the altar dedicated to the Virgin, making an entire length of 222 feet. The length of the nave is 261 feet; its breadth (including the aisles), 109; and its height, 99. These measurements (with the exception of the height of the towers at the west end, which is not given in that work) are taken from the last edition of Dugdale's *Monasticon Anglicanum*, by Caley, Ellis, and Bandinel, in six vols. folio, London, 1830.

York Minster has not the advantage of standing upon a height; yet its enormous mass makes it a conspicuous object from a great distance, and nothing can be grander or more imposing than the aspect which its lofty buttresses and grey towers present as they are seen rising over the surrounding houses of the city, which look like the structures of a more pigmy generation beneath the gigantic and venerable pile. Excepting on the north side where an open space of considerable extent has been formed by clearing away the old archiepiscopal palace, it is every where closely encompassed by other buildings, several of which approach within a few yards of its walls. There is scarcely, therefore a spot from which any one of its fronts can be completely or satisfactorily seen; except from a distance, where, of course, only the upper parts of the building are visible. The formation of a large open square around the noble old edifice, so that the whole might be viewed as perfectly as the north side, would exhibit the gigantic pile in all its surpassing magnificence. For the present the grandeur of the Minster must be sought for principally in its interior. The effect of the whole prolonged and lofty extent, as seen on entering from the great west door, is perhaps as sublime as any ever produced by architecture. Under favourable circumstances, such as the rich illumination of a setting sun, the impressions of awe, and veneration, and we may add delight, produced upon the mind by the grandeur and beauty of this wonderful building, are perhaps superior in intensity to the effects of any other work of man's hands. We doubt whether the finest Grecian temple could ever so touch the hidden springs of enthusiasm in our nature. The choir is divided from the nave by a stone screen; but this ornamental partition is so low as not to intercept the view of the portion of the roof beyond, nor "the dim religious light" streaming from the magnificent "storied window" that fills the east end of the building. This screen and the great east window are two of the proudest ornaments of the cathedral. The former is a work in the very richest style of ornamental carving; and fortunately it is

in almost perfect preservation. It is divided into compartments by fifteen niches, which contain the statues of the English kings from the Conqueror to Henry the VI., inclusive. The place of the last mentioned monarch used to be occupied by a figure of James I., which it is said was substituted for that of Henry, after the latter had been displaced in consequence of the disposition manifested by the people to pay it a sort of idolatrous reverence, in memory of the holy king. It seems to have been thought there was no danger of their falling into the same excess of observance towards James's effigy. James, however was not many years ago taken down from a situation where he was certainly out of place, and a new statue of Henry, carved by a York sculptor, put in the niche. The great east window is of the vast dimensions of 75 feet in height by 32 in breadth. It is formed of above 200 compartments of painted glass. According to Mr Britton, in his "Cathedral Antiquities," the figures are generally from two feet two to two feet four inches in height. The heads in particular are many of them drawn with exquisite beauty. The fabrication of this noble specimen of art was begun in 1405, by John Thornton, of Coventry, whose agreement was to complete it in three years, during which time he was to have a salary of four shillings a week, with 100 shillings additional per annum, and £10 more on finishing the work, if it should be done to the satisfaction of his employers.

Attached to the northern transept of the cathedral is the Chapter House, an octagonal building with a conical roof, the interior of which consists of one apartment of great magnificence. It is 63 feet in diameter and 67 feet 10 inches in height, the arched roof being supported without pillars. Around are aranged the stalls, forty-four in number, formed of the finest marble, and having their canopies sustained by slender columns. A window occupies each of the eight sides, except that in which is the entry from the transept.

York Minster contains a good many tombs, some of them of considerable beauty; but these we cannot here attempt to describe. Among the curiosities preserved in the vestry we can notice only the ancient chair, said to have been used at the coronation of some of the Saxon kings, and on which the archbishop is still on some occasions accustomed to seat himself, and the famous horn of Ulphus, one of the most curious relics of Saxon antiquity which have been preserved to our times. A learned dissertation respecting this horn, by Mr Samuel Gale, may be found in the first volume of the *Archæologia*. It was presented to the cathedral by Ulphus, a lord of Deira, whose drinking horn it probably had been, along with and in testimony and confirmation of a grant of certain lands, still said to be in possession of the Chapter, and known by the name of the *Terra Ulphi*. They lie a short distance to the east of the city. The horn which is in perfect preservation is of ivory, and among other sculpture on the outside is ornamented with figures of two griffins, a lion, a unicorn, and some dogs and trees, cut in has-relief. Mr Gale is of opinion that it was probably presented by Ulphus soon after the death of king Canute, which took place A. D. 1036. The horn was carried away at the time of the Reformation; but long after it fell into the hands of the celebrated Thomas lord Fairfax, by whose son Henry it was restored to the cathedral in 1675.

York Minster, it will be recollected, was very nearly destroyed, on the 2d of February, 1829, by the act of an insane individual, Jonathan Martin, who died lately under confinement. This person, having concealed himself in the choir after service the preceding evening, contrived to kindle a fire in that part of the building, which was not discovered till seven o'clock in the morning. By this time the wood work of the choir was every where in a blaze; but by great exertions, and especially by sawing through the beams of the roof, and allowing it to fall upon the flames below, the conflagration was in a few hours subdued. The damage done consisted in the entire destruction of the stalls of the choir, and of the 222 feet of roof by which that part of the building was covered. The organ over the screen was also destroyed, but the screen itself escaped uninjured. A public subscription was immediately commenced for the repair of a loss which was justly considered a national one, and the sum of £50,000 was collected within two months. The task of effecting the restoration was committed to Mr Smirke; and the work was admirably completed by 1833. The scrupulous care with which the restoration has been accomplished, so as to preserve every detail of the building, is highly creditable to the architect and his employers. The roof has been executed in teak, and the carved work of the choir in oak. With the exception that the choir looks cleaner and fresher than formerly, a person unacquainted with its destruction would be unable to perceive any change. The organ, one of the finest in Europe, was destroyed, and another is being erected in its place. Even in an unfinished state this appears to be a grand instrument; and well calculated for those fine choral services, which are heard with more effect in York Minster, than in any other cathedral.

YORK (presently called *Toronto*); the capital of Upper Canada, on the north-west side of lake Ontario; lon. 70° 20′ W.; lat. 43° 33′ N. The population is about 3000. It is handsomely built. The public buildings are a government-house, a house of assembly for the provincial parliament, a court-house, a jail, various buildings for public stores, and houses of worship. About a mile from the town are the barracks for the troops usually stationed here, and other buildings properly appertaining to such an establishment. The harbour is nearly circular, formed by a very narrow peninsula, which encloses a beautiful basin about one mile and a half in circuit, and capable of containing in security, a great number of vessels. The town is delightfully situated, the climate is mild, and the town and harbour are sheltered by high lands. In 1793, this town contained only a solitary Indian wigwam.

YORK; a short and navigable river of Virginia, formed by the union of the Pamunky and Mattapony. It flows into the Chesapeake opposite to cape Charles.

YORK, Frederic, duke of, second son of George III., was born at Buckingham house, in 1763. In the following year he was elected prince-bishop of Osnabrück, in Hanover; in 1767, was invested with the insignia of the order of the Bath, and chosen a companion of the most noble order of the Garter in 1771. In the literary part of his education, he was associated with his elder brother, to whom he always continued to be much attached; and the direction of the studies of the two princes was successively confided to doctor Markham, afterwards archbishop of York, assisted by doctor Jackson, and to doctor Hurd, bishop of Lichfield. Prince Fre-

derick was destined for the military profession, and, in 1780, having been appointed a brevet-colonel in the British service, he set off for the continent, and, after visiting Hanover, proceeded to Berlin, to study the tactics of his profession in the school of the great Frederic. During his absence, he was appointed colonel of the Coldstream guards, with the rank of lieutenant-general, and, in 1784, was created duke of York and Albany in Great Britain, and earl of Ulster in Ireland. In 1787, he took his seat in the house of peers, and in the debates on the regency, at the close of the following year, made his first speech in parliament. In 1789, a duel took place between the duke and colonel Lennox, afterwards duke of Richmond, who had required from his royal highness an explanation or retractation of an observation made by the latter. The duke not complying with the requisition, but expressing his willingness to waive the privileges of his rank, a meeting took place on Wimbledon common. The word being given to fire, colonel Lennox obeyed, and his ball grazed the hair of the duke, who fired his pistol in the air; and the affair terminated without any personal injury to the combatants. In 1791, the duke of York married the eldest daughter of Frederic William, king of Prussia. This union was the result of political arrangements; and, after a few years, a separation took place, arising from circumstances which did not imply any impropriety of conduct on the part of the duchess, whose death occurred in 1820. On his marriage, the duke of York received an augmentation of his income, which raised it to £35,000 a year, exclusive of the revenue of the bishopric of Osnabrück. In 1793, his royal highness was sent to Flanders at the head of a British army, to oppose the French. Valenciennes surrendered to the troops under his command, July 26; and, on the 22d of August, he sat down before Dunkirk, but was speedily obliged, by the French, to retire. In the campaign of 1794, Pichegru having taken the command of the French army, that of the duke, with his German allies, after experiencing various reverses, retreated into Westphalia; and in April, 1795, the remnant of the British army returned back to England. In February of the same year, the duke of York was appointed commander-in-chief. In 1799, he was again employed against the French in Holland; but the expedition terminated with a truce, one condition of which was the liberation of 8000 French and Dutch prisoners of war in England. This expedition terminated the services of the duke of York in the field, in the course of which he proved himself wholly unequal to his station. In 1809, colonel Wardle, in the house of commons, charged the duke with having suffered a female favourite, named Mary Anne Clarke, to influence him in the disposal of commissions in the army. The evidence brought forward showed that promotion had been extended to persons recommended by this woman, who made a traffic of such transactions; but as nothing occurred to implicate the duke of York directly in the corrupt transactions between Mrs Clarke and the persons to whom she sold her services, he was acquitted by a majority of eighty-two, who voted against the proposed general inquiry into his official conduct as commander-in-chief. His royal highness, however, thought proper to resign his post, in which, about two years after, he was reinstated by the prince-regent, with little or no objection on the part of the public. This circumstance produced in the duke a redoubled attention to his duties. From that time he exercised the most rigid impartiality in the distribution of promotion, and the humblest petition was sure of attention; the rights and comforts of the soldier were studiously attended to; and, without relaxing necessary discipline, some of its more odious and dispensable rigours were discountenanced. Upon the whole, both in a moral and a social, as well as in a military sense, the British army owes much to the exertions of this prince, whose rank and influence enabled him to effect improvements which equally good intentions, without such advantages, might have failed to secure. Among the future circumstances of his public life was his appointment to the post of keeper for the person of his father, in 1818, to which post was annexed a salary of £10,000 per annum. The last speech of the duke of York, in parliament, was against Catholic emancipation, and amounted to this, that he would never consent to that measure, should he be called on to reign. Not long after this event, he was attacked with a dropsy in the chest, which after long and protracted suffering, ultimately proved fatal on the 5th of January, 1827.

YORK (Henry Stuart), Cardinal of. See *Stuart, Henry.*

YORK; count von Wartenburg, Prussian field-marshal, one of the most distinguished German generals in the wars against Napoleon. (See *Russian-German War.*) He fought in America on the side of the British during the war of the revolution, and here became acquainted with the operations of light troops, which he afterwards introduced, with improvements, into the Prussian army. He was made a colonel in 1806, and distinguished himself by skilful manœuvres during the disastrous state of the Prussian army after the battle of Jena. In 1808, when the Prussian army was reorganized, he was made major-general and inspector of all the light troops. In 1812, he was one of the officers of the Prussian auxiliary corps of 20,000 men, under general Grawert, which, with the Polish, Bavarian and Westphalian troops, formed the tenth corps under the command of Macdonald, and was destined to cover the left wing of the French army, and to operate against Riga. When general Grawert laid down the command, on account of his ill health, general York became commander of the Prussian corps. When Napoleon ordered the retreat of the tenth corps to the Memel, York commanded the third column, which left Mitau, Dec. 20, followed by the Russians, under general Witgenstein and Paulucci, who entered Memel, while their van extended along the Memel. Thus the situation of general York was critical; but it was less for this reason than on account of the political situation of Europe, that he concluded the well-known convention of Dec. 30, 1812, according to which the Prussian corps separated from the French army, and assumed a neutral position.—See Seydlitz's *Journal of the Prussian Forces in the Campaign of* 1812 (Berlin, 1823, in German).—The king of Prussia was obliged to express disapprobation of this step; but the attitude which was soon assumed by the whole kingdom showed that it was in reality agreeable to the government. The step was bold, and entirely on the general's responsibility, and became a measure of great consequence. After his corps, which was much diminished in number, had been re-enforced in Prussia, general York led it to the Elbe, and obtained a victory at

Danigkow, April 5, 1813, over the army of the viceroy of Italy. General York was engaged in the battles of Lützen and Bautzen and distinguished himself on the day before the latter action, at Weissig, by an obstinate resistance to the forces under Sebastiani, five times more numerous than his own. After the armistice concluded in that memorable year, his troops formed the first corps of the Prussian army, and, being united with the Silesian army under Blücher, shared in the victory on the Katzbach, August 26. October 3, he gained a victory over Bertrand, near Wartenburg, in consequence of which the Silesian corps was enabled to cross over to the left bank of the Elbe. From this achievement he received the title count York von Wartenburg. In the battle of Leipsic, he defeated Marmont at Möckern, Oct. 16. He fought at Montmirail, Feb. 11, 1814. General Sacken had too hastily risked an engagement with Napoleon, which was likely to result in his destruction, when general York appeared, and enabled Sacken to escape, though with great loss. In the battle of Laon, March 9, he did great service, volunteering, with general Kleist, to conduct a nocturnal attack, which destroyed the corps of Marmont and Arrighi, and gave a decisive turn to the battle. After the peace, he received a considerable grant, and was made commanding general in Silesia and the grand-duchy of Posen. His son was wounded several times in the cavalry action near Versailles, July 1, 1815, and died a few days after—a circumstance which affected general York so much as to induce him to retire from service. May 5, 1821, he was made field-marshal-general. He died Oct. 4, 1830.

YORKE, Philip, first earl of Hardwicke, and lord high chancellor of England, was born in 1690, at Dover, in the county of Kent, where his father practised as an attorney, and brought up his son to the higher branch of his own profession. He was placed in the Middle Temple, and, being called to the bar in 1714, soon rose to great eminence as a counsel. In six years' time, the interest of lord chancellor Parker procured him the office of solicitor-general, in which capacity he displayed great professional knowledge and eloquence, as well as unbending integrity. Four years after, he was made attorney-general, and, on the resignation of lord King, in 1733, was made lord chief justice of the king's bench, with the barony of Hardwicke. On the decease of lord chancellor Talbot, in 1737, lord Hardwicke was elevated to the woolsack, and, during the long course of twenty years in which he presided in the equity courts, acquitted himself with so much ability, judgment and integrity, that only three of his decisions were ever called in question; and even all of these were, on appeal, confirmed by the upper house. In 1754, a patent was issued from the crown, advancing him to the rank of an earl; two years after which he resigned the seals, and retired from public life. Lord Hardwicke died in 1764. He was the author of a paper in the Spectator. His early professional work is an equity treatise, entitled the Legal Judicature in Chancery stated.

YORKINOS. See *Guerrero*.

YORKSHIRE; the largest county in England, is bounded on the north by Westmorland and Durham, on the east by the German ocean, on the south by the river Humber and the counties of Lincoln, Nottingham, Derby, and Chester; and on the west by Lancashire and Westmorland. From the latter counties it is chiefly separated by hills and moorlands, which have been termed the English Apennines, and its northern border line is formed throughout by the river Tees. Its extreme length from east to west is 96 miles, its utmost breadth from north to south, 86, and its circumference above 380. Yorkshire is divided into three districts, named, from their relative situations, the North, West, and East Ridings.

The North Riding includes all that part of the county extending from the shore of the German ocean to the border of Westmorland, and separated on the south from the East Riding by the rivers Hartford and Derwent, by the Ouse, from the Ainstey of York, and partly by the latter river and by the Ure from the West Riding, the remainder of the boundary-line being imaginary. The sea-coast of this Riding, from Scarborough nearly to the mouth of the Tees, is bold and rocky, the cliffs rising from sixty to 150 feet, and at Stoupe Brow, about seven miles south of Whitby, the height is not less than 890 feet. The surface generally rises rapidly, from the shore towards the interior, to about the height of 400 feet, at which level is a considerable extent of fertile soil. Further inland the hills become loftier, till they reach the elevated tract called the Eastern Moorlands, which, however, are intersected by several fine and fertile vales. Near the borders of this district some of the heights command noble and extensive prospects, and here is the mountain called Roseberry Topping, a noted landmark, 1020 feet high. North-westward of these mountains is the vale of Cleveland, a fertile district, bounded on the north by the river Tees. Part of the extensive vale of York is comprised within the North Riding, lying between the Eastern and Western Moorlands. The latter are of much greater elevation and of a bolder character than the former, but intersected by a multitude of fertile vales, watered by numerous streams.

The West Riding, which is by much the largest of the three, includes all the southern part of the county eastward of the river Ouse, by which it is divided from the East Riding. It exhibits considerable diversity of surface, but consists principally of three districts. That part which is included within the vale of York is level and marshy, except in a few places where there are low sandhills. The more central parts of this Riding consist of gentle eminences, exhibiting much fine scenery. The western and north-western parts are rugged and mountainous, here being some of the loftiest mountains of South Britain, particularly Ingleborough and Wharnside. Interspersed among these heights are several picturesque and beautiful valleys, the most extensive of which are those of Wharfedale, Nidderdale, and the vale of the Aire. In the north-west part of the Riding is the district of Craven, where are several small lakes, one of which, called Malham Water, is situated on a lofty moor.

The East Riding, the landward borders of which have been already specified, is bounded on the east by the sea, and on the south by the Humber. This district is not only smaller than the two preceding, but its characteristic features are also less strongly marked. The central part of the Riding from north to south, called the Wolds, consists of a lofty range of chalk-hills, extending from the banks of the Humber, westward of Hull, to the vicinity of New Malton, on the Derwent, and thence eastward to the German Ocean, where they terminate in the lofty promontory of Flamborough Head. To the

south, along the coast, the surface in general is flat and marshy, and near Hornsea is a lake called Hornsea Mere. This tract terminates in the low narrow headland called Spurn Head, westward of which is Sunk Island, consisting of fertile meadowland, nearly 5000 acres in extent, which has been chiefly recovered from the sea since the beginning of the seventeenth century. The western part of this Riding, usually termed the Levels, is a fruitful tract, but the scenery is tame and uninteresting. The Ainstey of York, situated between the three Ridings, though comparatively inconsiderable in the point of size, may be regarded as constituting a fourth distinct division. It is situated at the junction of the three Ridings, and is divided from the North Riding by the rivers Nid and Ouse, from the East Riding by the latter river, and from the West Riding principally by the Wharfe. The Ainstey was anciently a forest, and in the character of its surface and scenery it corresponds with the other parts of the vale of York.

The rivers of this county are numerous. They in general rise in the mountainous borders of the county, on every side except towards the sea, and uniting as their streams flow toward the centre, like the veins of a spreading leaf, at length terminate in one main trunk, which opens into the estuary of the Humber. The most important of these rivers are the Northern Ouse, the Swale, the Ure, the Wharfe, the Derwent, the Aire, the Calder, the Don, or Dun, and the Rother; besides which the Tees skirts the northern border of the county, and the Ribble, which soon passes into Lancashire, has its source in the western mountains of this county. There are several small streams, which rise in the northern part of the county and fall into the Tees. Among those which empty themselves immediately into the sea is the Eske, which has its source in the eastern moorlands, and, passing eastward, enters the German ocean at Whitby.

With regard to the agriculture of Yorkshire, the soil of the North Riding is chiefly of brownish clay and loam, and the hills along the coast, abound with argillaceous schistus, or alum shale. In the district of Cleveland the soil is a fertile clay and fine red sand, and in the Ainstey of York its composition is variable, but it is generally fertile. Swaledale contains very rich land, while the eastern moorlands are covered with morasses, peat-hogs, or loose rocks. In the West Riding the soil varies in quality, from a deep strong clay, or loam, to barren peat-earth. In the Wolds of the East Riding are 300,000 acres of sheep-walks, the soil of which is a light gravelly loam; and near the borders of the Humber is found strong clay-loam, remarkable for its fertility. In the North Riding, a considerable part of the vale of York, and the district between it and the sea, is under tillage. That portion of the West Riding extending westward from the river Ouse to Leeds, Wakefield, and Rotherham, consists principally of arable land, but little of which is found in other parts of the Riding. In the East Riding most of the land in the Wolds is under tillage, and also about one-third of the land in Holderness and Howdenshire, but more in the former than the latter. Wheat is raised in many parts in large quantities, the quality of which is good, especially in Cleveland; barley is largely cultivated in the Wolds; and in Ryedale, and other parts of the North Riding, big and bear are sometimes raised; rye is also cultivated on the lighter soils, sometimes, together with wheat. Oats form a general crop in the North and West Ridings, and in the latter this grain is frequently made into bread. Peas are chiefly raised in the North and East Ridings, and beans on the stronger soils. Swedish and other turnips are cultivated in various parts, and in the East Riding several kinds of cabbages are grown for feeding cattle. The culture of potatoes is general, and on the borders of the Ouse, and in Holderness, large quantities are raised for exportation to London. Rape is raised for seed in the North and West Ridings, flax in several parts, woad in the neighbourhood of Selby, mustard around York, and teasels in the wapentake of Barkstone Ash, in the West Riding. This county has long been noted for the excellence of its breed of horses, especially those of the North and East Ridings. The coach and saddle horses are generally sold at the fairs of Beverley, Malton, York, and Howden, and distributed to different parts of the kingdom, and often sent to the continent. The West Riding is famous for a breed of long-horned cattle, called the Craven breed; but in the northern part of the vale of York, and in Cleveland, the cattle are of the short-horned kind, called the Teeswater breed, known in the south of England under the appellation of Holderness cattle. Sheep kept here are of various kinds: on the Wolds those of the South-Down variety have been introduced; on the moors of the West Riding is a breed of sheep, supposed to be indigenous, called the Penistone breed; and great numbers of Scots sheep are fed in the low parts of the county.

The mineral productions of Yorkshire include coal, iron, and lead ores; alumstone, marble, limestone, and alabaster. In the West Riding is one of the most extensive coal-fields in the kingdom, extending westward from a line, stretching from north to south, between Ripon and Tickhill. The coal-mines are most numerous between the rivers Aire and Calder, and to the south about Barnsley and Sheffield. Ironstone is found in great quantities in the eastern moorlands, and some strata of this ore are worked in the vicinity of Whitby. At Grassington, in the West Riding, are considerable lead-mines, and there are others in Swaledale, Arkendale, and other parts of the western moorlands. Copper-ore has been found in the North Riding, at Richmond and at Middleton Tyas, where mines existed about the middle of the last century. The hills of Cleveland, and the rocks on the coast of the North Riding, consist largely of strata of aluminous slate, and near Whitby, alum-works have been long established. Marble occurs in the western mountains, some of which resembles in its veins and texture the Derbyshire marble; but it is used only for making lime, or other common purposes. Alabaster, or gypsum, is met with in the North Riding; and there are quarries from which it is procured near Thornton bridge, on the Swale; it is also found in the other Ridings. Near Knaresborough occurs a bed of Strontian earth; and about Whitby are found the fossils called cornua ammonis, with some other curious productions of a similar kind.

The manufactures of Yorkshire, especially those of the West Riding, are of great national importance. Woollen cloths and stuffs, of various descriptions, have long been manufactured in the extensive district around Halifax, Bradford, Leeds, Wakefield, and Huddersfield. This manufacture formerly was principally confined to the coarser kinds of cloth, but now broad cloths and kerseymeres are largely made; and, likewise, blankets, carpets,

baizes, serges, shalloons, camlets, moreens, and other articles, in great variety. There are also large factories for making course linens and Manchester cotton goods. Sheffield, from an early period, has been noted for cutlery and hardware, besides which it has now iron and brass founderies. Among the other manufactures of Yorkshire may be mentioned pottery, bricks, and tiles, hair-cloth, tanned leather, ropes, and sail-cloth. Hull, in this county, is one of the most important of our seaports, and the county also contains the ports of Whitby, Scarborough, Bridlington, and Goole. The West Riding is intersected by several canals, for the convenience of commercial intercourse with other parts of the kingdom, and with the sea. Off the coast are found abundance of fish of various kinds, the taking of which furnishes employment for an industrious and hardy race of fishermen, inhabitants of sea-side villages, who often pursue their prey to great distances, and furnish extensive supplies of provisions for the country. Some of the ports, especially Hull and Whitby, share to a great extent in the Greenland fishery and the commerce of the Baltic.

Yorkshire contains the city of York, and the boroughs of Northallerton, Beverley, Boroughbridge, Aldborough, Hedon, Kingston-upon-Hull, Knaresborough, New Malton, Pontefract, Richmond, Ripon, Scarborough, and Thirsk. The market-towns in Yorkshire are Abberford, Askrigg, Barnsley, Bawtry, Bedale, Bingley, Bradford, Bridlington, Dewsbury, Doncaster (formerly a borough), Great Driffield, Easingwold, Gisburn, Goole, Guisborough, Halifax, Harewood, Hawes, Helmsley, Howden, Huddersfield, Keighley, Kirkby Moorside, Leeds, Leyburn, Masham, Otley, Pateley Bridge, Patrington, Penistone, Pickering, Pocklington, Reeth, Ripley, Rotherham, Sedbergh, Selby, Settle, Sheffield, Sherburn, Skipton, Snaith, South Cave, Stokesley, Tadcaster, Thorne, Wakefield, Market Weighton, Wetherby, Whitby, and Yarm; besides which may be mentioned, Cawood, Cottingham, Hornsea, Middleham, and Tickhill, the markets of which are discontinued or inconsiderable. The whole of this county is within the diocese of York, except a part of the North Riding, which belongs to that of Chester. It consists of three archdeaconries in the former diocese, namely, that of York or the West Riding, that of the East Riding, and that of Cleveland; that part of the county which belongs to Chester is in the archdeaconry of Richmond. Population of the county in 1801, 887,000; in 1811, 1,019,200; in 1821, 1,173,187; in 1831, 1,371,296; in 1841, 1,591,480.

YORKTOWN; a post-town, port of entry, and capital of York county, Virginia, on the south side of York river, twenty-nine miles north-west of Norfolk. York river affords, at this town, the best harbour in Virginia; but it has not become a place of large population or extensive trade. Yorktown is famous for the capture of lord Cornwallis and his army by the Americans under general Washington, October 19, 1781. The whole number of the prisoners amounted to 7107. This was the last considerable battle in the revolutionary war, and was the immediate cause of the conclusion of the American contest for independence.

YOUGHAL; a town of Ireland, in the county of Cork, situated on the estuary of the Black-water, 154 miles south-west from Dublin. The harbour is deep within, but obstructed at the entrance by a bar, denying admission to large ships, which, together with the great superiority of Cork harbour, reduce the traffic of this port to a mere coasting trade. Large quantities of grain are shipped here, at a very inconvenient quay, and Cork is supplied with good building-bricks from this vicinity. The convenience of its situation for bathing, and the agreeable character of the strand, have rendered this a place of fashionable resort in the summer-season. Population of the town in 1841, 9939.

YOUNG, Arthur, a distinguished agricultural writer, was the son of Arthur Young, a prebendary of Canterbury, and born in 1741. He served his apprenticeship to a wine merchant; but on entering into the possession of his paternal estate, near Bury St Edmunds, he became a farmer, and impoverished himself by experiments. After several unsuccessful attempts to conduct a farm, he determined to examine the mode of cultivation pursued in different parts of England. In 1770, he published the Farmer's Calendar, containing the Business necessary to be performed on the various Kinds of Farms during every Month in the Year (8th ed., 4 vols., 8vo., 1812), and, in 1784, began the publication of his Annals of Agriculture (40th vol., in 1804)—a work which had the most important influence upon the art of agriculture in England, and of which a considerable portion was translated into French, under the auspices of the government. In 1789, he was appointed secretary of the newly erected board of agriculture, with a salary of £600 a-year. Young not only visited and examined, with great attention, the different counties of England and Ireland, but also made several tours on the continent, for the purpose of becoming acquainted with the agricultural processes in different countries. He became blind some years before his death which happened on the 20th Feb., 1820. Of his numerous works, we can mention only the principal:—Farmer's Letters to the people of England (1767), second volume under the title of Letters to the Landlords of Great Britain (1771); a Six Weeks' Tour through the Southern Counties (1768, 2d ed., enlarged, 1769); a Six Months' Tour through the North of England (1770, 4 vols.); the Farmer's Tour through the East of England (4 vols. 1770); Tour in Ireland (2 vols., 1780); Travels in France, Spain, and Italy, 1787—9 (1791, 2 vols. 4to.); Travels during the Years 1787—1790 (1792); Rural Economy (1772); and Farmer's Guide (1770, 2 vols,, 8vo.).

YOUNG, Edward, a distinguished English poet of the last century, was born at his father's living of Upham, in Hampshire, in 1681, or, according to some, two years earlier. He was educated at Winchester school, and obtained a New college fellowship, which he resigned in 1708, for another at All-Souls, in the same university. Although originally designed for the law, which induced him to graduate in that faculty, the predominant bias of his mind towards a religious life at length induced him to take orders. His poems on the Last Day, and the Force of Religion, printed in 1713, strongly manifest this prevailing feeling. At one time he aspired to the representation of the burgh of Cirencester in parliament; but, failing in this undertaking, he soon after entered the church, and obtained the living of Welwyn, Hertfordshire, with a king's chaplaincy. In 1741, the death of his wife, to whom he was much attached, appears to have much increased the melancholy of a mind originally of a sombre complexion; and to this event may be ascribed the production of his principal poem, the Complaint, or Night Thoughts, by which latter

title it is more generally designated. Besides this poem, doctor Young was the author of three tragedies, Busiris, the Brothers, and the Revenge. Some satires, under the title of Love of Fame, the Universal Passion, with a poem entitled Resignation, written in 1759, conclude his poetical labours. As a prose writer, he is chiefly known by his Centaur not Fabulous, levelled against the prevailing manners of the time: and a treatise entitled Conjectures on original Composition, written at the age of eighty. Doctor Young, in his retirement at Welwyn, maintained the situation of a man of easy fortune. His latter years were, however, subject to much discontent; he had taken deep offence at the youthful irregularities of his son, and he fell under the sway of a housekeeper, by whom he was entirely governed. On his death-bed, he declined an interview with the former, but sent him his forgiveness, and made him his heir. His death took place in April, 1765, in his eighty-fourth year. The fame of Dr Young rests altogether on his poetry, comprising his satires, tragedies and Night Thoughts. The first are built on the supposition of fame being the universal passion of mankind. They abound more in flashes of wit and caricature than in grave exposures of vice and folly; but they are lively and epigrammatic. As a dramatic writer, with much poetic conception and strong feeling, he is exaggerated and bombastic. The Revenge however, keeps the stage; and its hero, Zanga, stands pre-eminent for theatric interest among the personages of modern tragedy. The Night Thoughts, on which the fame of Young for originality is exclusively founded, although occasionally turnid and extravagant, exhibit great force of language, and occasional sublimity of imagination. They are even more popular in France and Germany, than at home, and have passed through a great number of editions. An edition of his entire works, in four volumes, octavo, was published by himself. See his *Life*, by Herbert Croft, in Johnson's Lives of the Poets.

YOUNG, THOMAS, M. D., a distinguished scholar born in June, 1773, was educated partly at Göttingen and partly at Edinburgh. Having taken his degrees at the latter place, he went to London, and was sometime lecturer at the royal institution. He was subsequently appointed physician to St George's hospital, and, in 1794, was elected a fellow of the royal society. Doctor Young was equally eminent in science and in letters. He was particularly distinguished for his great knowledge of the practical application of science to the useful arts and the business of life; and his opinion was often called for by government, when these and kindred subjects were made matters of legislation. In this department, besides a great number of papers in the Transactions of the Royal Society, and Nicholson's Journal, and a variety of articles in the Quarterly Review, and the Supplement to the *Encyclopædia Britannica*, some of which were, however, on literary subjects, Doctor Young left behind him a Syllabus of a Course of Lectures on Natural and Experimental Philosophy (8vo., 1802), which contains the first publication of the general law of the interference of light; a Course of Lectures on Natural Philosophy and the Mechanical Arts (2 vols., 4to., 1807); Elementary Illustration of the Celestial Mechanics of Laplace (8vo., 1821), &c. He likewise edited the Nautical Almanac from the year 1819 to 1829. His productions in the department of archæology and criticism were also numerous, and are principally to be found in the Imperial Review, the London Quarterly Review, and the Archæologia. In the eighteenth volume of the latter work appeared his remarks on Egyptian papyri, and the Rosetta inscription, containing an attempt to interpret the Egyptian part of the inscription. In the article *Egypt*, for the supplement to the Encyclopædia, he treated the whole subject of Egyptian mythology, early history, and hieroglyphics with great learning; but we have already given our reasons, in the article *Hieroglyphics*, for denying him the honour claimed for him by his countrymen, of having discovered and explained the phonetic system, which the late ingenious and learned Champollion so ably developed. The discoveries of Champollion were followed by two additional works of doctor Young on the subject, under the titles, an Account of some recent Discoveries in Hieroglyphical Literature and Egyptian Antiquities (8vo., 1823), and Hieroglyphics collected by the Egyptian Society (folio. 1823). Doctor Young died in 1829.

YPRES, OR YPERN; a city of Belgium, in West Flanders, capital of a district, on the river Y-perlee, from whence it takes its name; twenty miles south of Ostend, sixteen north-west of Lisle, lon. 2° 53′ east; lat. 50° 51′ north; population, 15,291. It is connected by a canal with Bruges, Ostend, and Nieuport, is fortified, and tolerably well built. The principal public buildings are a very large Gothic town-house, an elegant cathedral, an exchange, a chamber of commerce, and a college. The city of Ypres is more interesting on account of what it formerly was than for what it now is. It still contains some manufactures of cloth, serges, ribands, and thread; but at one time its inhabitants appear to have formed the greatest manufacturing community in the world. A census of the population, taken in 1342, made it amount to above 200,000 souls. Soon after this, however, its decline began. In a French edition of Ludovico Guicciardini's "Description of the Low Countries," published at Antwerp, in 1609, it is remarked, that whensoever, and in what quantity soever the rain of adversity had in former days fallen upon Ghent and Bruges, Ypres had always received some drops of it; and that this city, indeed, being the weakest of the three, had often been severely punished, and obliged to pay the forfeit for misdeeds which the other two had committed. All these towns suffered both by the attacks of foreign enemies and by their own internal dissensions. The middle of the fourteenth century was in the Netherlands, as in France and in England, the age of political convulsion—of the first considerable efforts, since the establishment of feudal institutions, made by the body of the people to throw off the oppressive yoke under which they were everywhere kept down. Some contemporary writers attribute these tumults of the commonalty to the improvement which had now taken place in their condition, as compared with that of their forefathers; and there can be no doubt that there is much truth in this representation. As long as the condition of the people was one of almost brutal destitution and misery, they submitted to be treated like the inferior animals; but as they gradually outgrew this absolute penury and helplessness, they became more indisposed to endure the oppression to which they were subjected, and began first to murmur against it, and then attempt to throw it off. The attempt, as was to be expected, was not skilfully directed in the first instance,

and was productive of no immediate good effects; but it prepared the way for future and more successful struggles. It served at least as an example, and, that once given, the rest followed of course.

For this leading step in the onward march of civilization, we are mainly indebted to the citizens of Ypres and other Flemish towns. The cloth weavers of these towns were the first commonalty in Europe that became to a certain extent, independent of their feudal lords, and acquired a degree of inherent power and importance by means of manufactures and trade. They were accordingly the first to rise in extensive and formidable concert against the system of misrule by the grandees and lords of the soil which then universally prevailed. And from the Netherlands, the movement was propagated into other countries. English liberty in particular is probably much indebted to these sturdy burghers. To us they gave much more than their example. Edward III. brought over to England large numbers of these cloth-workers from the Netherlands, who settling here, communicated to our labouring classes their own arts and habits of industry, and may also be supposed to have transmitted and diffused that new spirit of liberty which had principally induced them to leave the land of their birth. Elizabeth also, long after, again increased the population of this island by opening her ports to those mechanics of the Low Countries who were driven abroad in her day, by the tyrannical conduct of the Spanish government of that province, as administered by the notorious duke of Alva.

The first insurrection of the Flemings, however, against their princes, was, as we have observed, attended with very disastrous results to Ypres and the other towns, whose inhabitants engaged in it. "Before the commencement of these wars in Flanders," says Froissart, in commencing his account of the attempt made by the people, in the latter part of the fourteenth century, to restrain the oppressions of their governors, "the country was so fertile, and everything in such abundance, that it was marvellous to see, and the inhabitants of the principal towns lived in very grand state." But the war laid all this prosperity waste. "The people," he says, "were very murderous and cruel, and multitudes were slain or driven out of the country. The country itself was so much ruined, that it was said a hundred years would not restore it to the situation it was in before the war."

This war was left for some time at first to rage between the earl of Flanders and his insurgent subjects, who, according to an old custom of the country, having chosen themselves leaders, assumed the name of White-hoods. At length, however, the French king, Charles VI., struck in, to the aid of his brother potentate; and although the rebels had been hitherto successful at every point, this interference speedily turned the scale. The following is the account which Froissart gives of the submission of the city of Ypres to the powerful force which the earl was now enabled to bring against it:

"As soon as the citizens of Ypres learned that the earl was on his march thither with such a force, they were greatly alarmed; and the principal and richest inhabitants held a council, in which they resolved to open their gates, and go out to meet him, with offers to replace themselves under his obedience, trusting to his mercy. It was well known to him that they had allied themselves with Ghent through fear of the lower ranks, such as weavers, fullers, and other ill-intentioned people of the town; they besides depended on his kind and merciful character for their pardon. As they had resolved, so did they execute; and upwards of three hundred in a company went out of the town, carrying the keys of the gates with them. On meeting the earl of Flanders, they fell on their knees, and begged for mercy, saying, that they personally and the whole town, resigned themselves to his will. The Earl took pity on them, made them rise, and granted them his pardon. He entered the town of Ypres with his whole army, and remained there for three weeks, sending back those of the Franc and of Bruges to their several towns. During his residence in Ypres, he had upwards of seven hundred weavers and fullers beheaded; and all those who had been any way concerned in admitting John Lyon and the Ghent men into the town, who had slain the knights and men-at-arms whom he had sent thither, and which had enraged him so much. To prevent them again rebelling against him, he sent three hundred of the principal inhabitants to prison in Bruges, escorted by a handsome body of men-at-arms."

But these successes of the Earl of Flanders and his ally, the king of France, soon aroused a strong feeling of hostility against France in England. Froissart attributes this to envy. However this may be, Lord Henry Spencer, bishop of Norwich, having been about this time appointed by Pope Urban VI. commander-in-chief for England, of what was called a crusade in the interest of that pope, against his rival Clement IV., and having as such been placed at the head of a formidable force, he and his troops embarked for the continent, and landed at Calais on the 23d of April, 1383. A consultation was then held by the leaders with the object of determining in what direction they should next proceed; when it was resolved that the expedition should march into Flanders. They then sent to the insurgents in Ghent for their aid.—"When Peter du Bois, Peter le Nintre, and the captains in Ghent," continues the historian, "heard that the English demanded their assistance, and were lying before Ypres, they were much pleased, and prepared themselves to march thither as speedily as possible. They set out from Ghent on the Saturday morning after the octave of St Peter and St Paul, to the amount of near 20,000, with a very considerable train of carts, and in good array. They marched by Courtray, and came before Ypres. The English were rejoiced at their coming, and made great cheer for them, saying they would take Ypres, and then conquer Bruges, Damme, and Sluys, making no doubt that before September they would have conquered all Flanders. Thus did they boast of their good fortune."

The issue, however, was very mortifying. "It always happens," says Froissart, "that in war there are gains and losses; very extraordinary are the chances, as those know well who follow the profession. The siege of Ypres was pushed on with unwearied force; and it was fully the intention of the bishop of Norwich, the English, and Peter de Bois, to conquer Ypres by storm or otherwise, as the vigour of their attacks showed." But all their assaults being attended with no result, they resolved to adopt a new plan of operations. Froissart continues, "The English and Flemings, finding they could not take the town by storm, and having expended much of their artillery, resolved to have quantities of faggots made and collected,

with which and earth they would fill up the ditches, so that they might advance to fight hand to hand with the garrison, undermine the walls, and, by throwing them down, win the place." Before this expedient could be executed, however, news was brought that the king of France was advancing with a powerful body of troops; and on receiving this intelligence, the bishop and his captains thought it best upon the whole to endeavour to make their escape as fast as they could. They reached home, and also contrived to carry with them a good deal of booty: but they were not thought to have brought much honour back from their campaign. "When these knights," the historian tells us, "returned to England, they were attacked by the common people, who told them they had behaved very badly in their expedition, for, from the prosperity they had had at the beginning, they ought to have conquered all Flanders."

YPSILANTI; an old Greek Fanariot family at Constantinople, descended from the Comneni, members of which have several times held the dignity of hospodar in Moldavia and Walachia. The grandfather of the princes Alexander and Demetrius, celebrated for their share in the Greek revolution, was executed at the command of the Porte, with the most horrible tortures. Their great-grandfather and uncle were victims of the bow-string. The father, Constantine Ypsilanti, hospodar of Walachia, was deposed by the Porte in 1805, but was reinstated at the request of Russia. When Russia threatened the Porte with war in 1806, he learned that his head was in danger, and fled to Jassy. The Russian government assigned him and his family Kiev as a residence. When the Russians advanced into Walachia, he hoped to recover this principality by their aid. With this view, he repaired thither, and armed the Walachians against the Turks; but instead of the 40,000 men whom the Russian general required of him, he could collect only 5000. The body of Russian auxiliaries was therefore too weak; and Ypsilanti had to escape, by way of Transylvania, to Russia, where he died at Kiev, in 1816. He wrote several works. His sons entered the Russian service. The eldest, *Alexander*, imperial Russian major-general, and aid-de-camp of the emperor, born at Constantinople, Dec. 12, 1792, went with his father, in 1805, to Petersburg, and entered the Russian service. He fought with distinction at Polotzk, in 1812, and was a captain of hussars, when a ball, at the battle of Dresden, Aug. 27, 1813, carried away his right hand. In 1814, he spent some time in Weimar. About this time, the emperor made him a colonel and his aid-de-camp. In 1817, he received the command of a brigade of hussars, and was appointed major-general. In 1820, he became acquainted with the Hetaireia. He joined this association, and eventually became its head. When he saw that the breaking out of the insurrection could no longer be delayed, one of his couriers having been arrested in Servia, so that he had reason to fear the discovery of the whole plan, he resolved to plant in Moldavia the standard of revolt. He crossed the Pruth with a few attendants, and, on Feb. 23, old style, (March 7), 1821, at Jassy, the capital of Moldavia, under the very eyes of the hospodar, Michael Suzzo, issued a proclamation in which he announced that on this day Greece had kindled the torch of freedom, and thrown off the yoke of tyranny. (See *Greece, Insurrection of.*) This step of Ypsilanti's was connected with the plan of a general insurrection, which was to break out simultaneously in the Morea, on the islands, and in Constantinople. Ypsilanti hoped to promote the main project by his entrance into Moldavia. The insurrection was also hastened by the enterprise of Theodore Wladimiresko. This rude but daring Walachian, after the death of the hospodar of Walachia, Alex. Suzzo, Jan. 30, 1821, had, with a band of Arnaouts, called the Walachian peasants and pandoors to arms, in order to obtain from the Porte, by means of the assistance of Russia, which he promised them, the restoration of the ancient rights of the country. Ypsilanti, who, however, was in no way connected with Wladimiresko, gave his companions and all the Hetairists, who hastened to him from Russia and Germany, the assurance that Russia would assist the cause of Greece. But the military insurrections in Italy, on account of which the congress of Layhach was convened, induced the emperor Alexander to express publicly his disapprobation of the undertaking of the Hetairists, and to summon their leader, the prince Alex. Ypsilanti, to make his defence. As he did not obey, the emperor caused his name to be struck from the rolls of the Russian army. The Russian consul at Jassy had already, April 9, issued two proclamations, in the name of his sovereign, commanding prince Ypsilanti and his adherents to return immediately to Russia, and exhorting the Moldavians to tranquillity and obedience to the Porte. Mich. Suzzo was, in consequence, obliged to leave Moldavia, April 11; and the boyards sent deputies to the Porte, praying that another hospodar might be given them, adding the assurance, that they would themselves suppress the rebellion. Ypsilanti, when he learned this, was on his march to Bucharest. He and his band, of about 5000 men, persisted firmly in their enterprise. April 10, he entered Bucharest, which city Wladimiresko, who would not join Ypsilanti, had left with his pandoors, shortly before. April 12, Ypsilanti marched to Tergowist, where he wasted his time, while Wladimiresko was negociating with the Porte. The boyards themselves had refused all participation in Ypsilanti's attempt; and many of them had fled, with their wives, children, and property, to Transylvania. Wladimiresko's insurrection was directed more against the boyards than against the Porte. At the same time, the three pachas of Widdin, Silistria, and Brailow, with 10,000 Turkish troops, entered Walachia and Moldavia. At Jassy, where the Hetairists had wrested the administration from the boyards, complete anarchy prevailed. Jussuf, seraskier of Brailow, defeated the Greeks at Galacz, May 13, took the city by storm, destroyed the French flotilla on the Danube, and compelled the Hetairists, May 18, to evacuate Jassy. George Cantacuzeno retired, with about 3000 men, without opposition, behind the Pruth. Meanwhile Wladimiresko had regained possession of Bucharest, where he continued to negociate with the Turks. May 28, he relinquished the city to Kiaya Mehmed, pacha of Silistria, and, after some inconsiderable skirmishes with the Turks, retreated to Pitescht, to make advances to prince Ypsilanti. But Ypsilanti caused him to be seized by captain Jordaki, (called also *Gorgakis*, or *George of Olympus*) conveyed to Tergowist, and after a trial by a court-martial, to be beheaded as guilty of high treason, June 7. This transaction excited much dissatisfaction and defection, because Theodore Wladimiresko had never formally acknowledged Ypsilanti's supremacy. A portion, indeed, of

his Arnaouts, Walachians, and pandoors joined the Hetairists; but the pacha of Brailow was soon able to enter into secret communications with these Arnaouts. When Ypsilanti left his fortified position at Rimnik, and marched towards Dragaschan, his van, of 1000 men, led by the brave Jordaki, being attacked by the Turks, on June 19, the Walachians and pandoors took to flight, and Jordaki with a few hundred men was obliged to fall back to the sacred band of the Hetairists. A part of the Arnaouts now fled, and abandoned the artillery, consisting of five pieces of cannon. At this moment, a nephew of the murdered patriarch Gregory stepped forward, and exhorted his companions to show the sacredness of their cause by a heroic death. The youths advanced in close order, and fell by files in the conflict. A few only succeeded in saving themselves with Ypsilanti, in the fortified monastery of Costia. Thus was the flower of Greece destroyed. Alexander Ypsilanti now gave up the cause of Greece. Having crossed the frontiers, he was arrested in Transylvania, and, with his brother Nicholas, conveyed as a prisoner of state to the fortress of Mungatsch, in Hungary. From this place they were both removed, in August, 1823, to the fortress of Theresienstadt, in Bohemia, where they were treated with great mildness. The above-mentioned division of Greek troops, under prince George Cantacuzeno, was attacked by the Turks, June 25, at Stinka, on the Pruth, and defeated, after an engagement of six hours. Moldavia and Walachia remained occupied by the Turkish troops, who committed the greatest outrages, and were not entirely withdrawn from both principalities till 1826.—See *Nouvelles Observations sur la Valachie, etc., suivies d'un Précis historique des Evénemens qui se sont passés dans cette Province en* 1821, *par un Témoin oculaire, avec le Plan de la Bat. de Dragaschan. Par F. G. L.* (Paris, 1822). After prince Alexander had remained two years in Mungatsch, and four years and a half in Theresienstadt, Russia demanded his release, in August, 1827. This, however, was not granted until the end of November, and then under the condition, imposed by Austria, that the prince should not leave the Austrian dominions. Alex. Ypsilanti died at Vienna, in January, 1828, hardly thirty-six years of age.

During this time, *Demetrius Ypsilanti*, with full powers from his brother Alexander, had repaired to the insurgents in Greece. Demetrius (born Dec. 25, 1793), entered the Russian hussar regiment of guards, as a cornet, in 1815, and was soon after appointed adjutant of general Rajewsky. As second captain (equal in rank to lieutenant-colonel in the troops of the line), he distinguished himself in the campaign of 1814. He now appeared as commander in the Morea, where, as long as the Russian party had the preponderance, he was held in respect. He took the lead in the Greek government at Argos, was then proclaimed prince of Peloponnesus, and appointed general-in-chief in that peninsula. At the end of 1822, he became president of the legislative council. But the English party having begun to prevail, he was removed from his situation in 1823, and retired from public affairs, but on important exigencies took an active part. He saved the Peloponnesus on the invasion of Dram Ali, by throwing himself, with a band of Hellenists, into the fortress of Argos, and giving the other companies time to assemble. Against the resolution of the third national assembly of the Greeks at Epidaurus, requesting the British ambassador in Constantinople to negociate a peace between the Porte and the Greeks, which should provide for an independent Greek government, on condition of a yearly tribute, Demetrius Ypsilanti entered a protest. When Capo d'Istrias was appointed president of the Hellenic republic, in 1828, prince Demetrius received a command in Acarnania.

A third brother, *George*, born at Constantinople, March 21, 1794, accompanied Alexander Ypsilanti on the expedition to Moldavia and Walachia, and shared his misfortunes and his long imprisonment.

The fourth brother, *Nicolas*, born at Constantinople, August 16, 1796, was commander of the Sacred Band. He had the same fortune as Alexander and George. He died at Odessa, 3d April, 1833.

Of the two sisters, *Catharine* and *Maria*, the latter, born in 1798, devoted to the cause of her country her whole dowry, amounting to 350,000 francs.

The youngest brother, *Gregory Theodatius*, born at Bucharest, in 1805, received his education in Paris. The annual incomes of the family amount to one and a half million roubles.

YRIARTE.

1. *Juan de Yriarte*, royal librarian and member of the Spanish academy, a bibliographer of note, was born in 1702, on the island of Teneriffe. He studied classical literature at Paris. After eight years, he went to London, and soon after home, where he chiefly occupied himself with English literature. In 1724, he went to Madrid to study law; but his inclination to philology and bibliography predominated, and, being constantly in the royal library, then under the direction of the historian Juan de Ferreras, the latter soon made him secretary of the library. The fruit of his biographical studies was the catalogue of Greek manuscripts in that collection, the first volume of which appeared in 1764, folio, under the title *Regiæ Bibliothecæ Matritensis Codices MSS. Joannes Yriarte excussit, recensuit, Notis, Indicibus, Anecdotis pluribus evulgatis illustravit*, &c. This volume contains accounts of nearly sixty manuscripts, which Constantine Lascaris had copied with his own hand. This work was completed by a second volume. Yriarte also prepared catalogues of the geographical, chronological and mathematical works contained in the royal library, which appeared in 1729 and 1730, made many corrections and additions to Antonio's treatise on Spanish authors, &c. As a member of the Spanish academy, into which he was admitted in 1742, he was very active, and contributed many observations to the treatise on Spanish orthography, to the Castilian Grammar and the Dictionary of the academy. Among his Latin poems, his numerous epigrams deserve mention. He was an industrious contributor to the *Diario de los Literatos*. His favourite literary occupation was the collecting of Spanish proverbs, of which he brought together about 15,000, from books as well as from the mouths of the people. His Latin Grammar, on which he laboured forty years, contains rules in Spanish rhymes, with explanations in prose: it was not published until after his death, by his nephew in 1771, at Madrid, who also published, in 1774, the miscellaneous works of his uncle. He died in 1771, at Madrid.

2. *Tomas de Yriarte*, of whom a few words were said under the head *Iriarte*, nephew of the preceding, one of the best Spanish poets of modern times, was born in 1752. He first appeared as a poet in

1770, with a comedy (*Hacer que Hacemos*). This was followed by several translations of French plays for the royal theatre, and a few original dramatic compositions. But they are forgotten; and his literary fame is founded on his Fables. Before the publication of these, he produced a didactic poem, in five cantos, On Music (*La Musica*), the first edition of which (Madrid, 1779) is distinguished by typographical beauty. This poem is written in elegant language, but is deficient in poetical conception. Grainville translated it, in 1800, into French. In his Literary Fables (*Fabulas Literarias*), which first appeared in 1782, Yriarte attacked what he considered the faults and errors of literary men. They are the productions of an unpoetical period, in which the French manner was predominant in Spain. They are, therefore, cold, and without humour; but the language is easy, and there is much variety and elegance in the metres. They have been translated into French and German. In 1787, he collected his works in prose and verse, at Madrid, in six volumes, of which the first contains the Fables and *La Musica*. In the second are eleven Epistles, mostly satirical, also chiefly directed against the errors of scholars. The other volumes contain, besides, a number of imitations and original poems, also a metrical translation of the Epistles of Horace to the Pisos, with explanatory notes. One of his enemies, Juan Pablo Forner, irritated by his satires, wrote a bitter attack on him under the title of *Li Asno erudito* (The Learned Ass). Yriarte replied with his *Para Casos tales suelen tener los Maestros oficiales*. In 1788, he published a comedy, *La Senorita mal Criada*, in which, as in a former, *El Senorito mimado*, the Spanish critics praise the strict observance of the three unities. Yriarte died in 1794.—See *Ensayo de una Biblioteca Espanola de los mejores Escritores del Reynado de Carlos III., por Sempere y Guarinos* (Madrid, 1789, 6 vols.).

YSENPURG. See *Isenburg*.

YTHAN, or ITHAN, a river in Aberdeenshire, which rises in the hills of the parish of Forgue; after a south-easterly course of about thirty miles, being augmented about twelve miles from its mouth by the Gight, it falls into the sea at the small village of Newburgh. The parish of Foveran is on its south bank, and that of Slains on the north at its estuary. It is navigable for three miles, as far as Ellon; and vessels of 100 or 150 tons burden can proceed a mile up. It possesses a valuable salmon fishery.

YTTRIA is the name of a very rare earth, discovered in the composition of a mineral found at Ytterby, in Sweden; hence its name. The name of the mineral is *gadolinite*. The earth may be obtained by fusing the gadolinite with two parts of caustic potash, washing the mass with boiling water, and filtering the liquor, which is of a fine green. This liquor is to be evaporated till no more oxide of manganese falls down from it in a black powder; after which the liquid is to be saturated with nitric acid. At the same time, digest the sediment that was not dissolved in very dilute nitric acid, which will dissolve the earth with much heat, leaving the silex and the highly-oxidized iron undissolved. Mix the two liquors, evaporate them to dryness, redissolve and filter, which will separate any silex or oxide of iron that may have been left. A few drops of a solution of carbonate of potash will separate any lime that may be present; and a cautious addition of hydrosulphuret of potash will throw down the oxide of manganese that may have been left; but if too much be employed, it will throw down the yttria also. Lastly, the yttria is to be precipitated by pure ammonia, well washed and dried. It is perfectly white. Its specific gravity is 4·842. It has neither taste nor smell. It is infusible alone, but with borax, melts into a transparent glass, or opaque-white, if the borax is in excess. It is insoluble in water, and in caustic fixed alkalies; but it dissolves in carbonat of ammonia, though it requires five or six times as much as glucine. It is soluble in most of the acids. The salts have the following general characters:—Many of them are insoluble in water. Precipitates are occasioned in those which dissolve, by phosphate of soda, carbonate of soda, oxalate of ammonia, tartrate of potash, and ferroprussiate of potash. If we except the sweet-tasted, soluble sulphate of yttria, the other salts of this earth resemble those with a base of lime in their solubility. When yttria is treated with potassium in the same manner as the other earths, similar results are obtained. The potassium becomes potash, and the earth assumes the appearance of a metal. Its texture is scaly; its colour gray-black, and lustre perfectly metallic. This scaly texture distinguishes it from aluminum and glucinum. Yttrium—for this is the name of the metallic base—is not oxidized either in air or water, at common temperatures; but when heated to redness, it burns with splendour, and becomes yttria.

YTTRO-CERITE; a massive mineral, of a reddish, grayish-white, or violet-blue colour. It occurs in crusts, sometimes having an indistinct cleavage; opaque; yields to the knife; specific gravity 3·447. Its constituents are oxide of cerium 13·15, yttria 14·6, lime 47·77, fluoric acid 24·45. It has hitherto been found only at Finbo, near Fahlun, in Sweden, imbedded in quartz.

YTTRO-TANTALITE occurs massive, has a degree of hardness above apatite, a specific gravity of 5·3 or 5·8, a metallic lustre, and a blackish-brown colour. It is opaque. Under the blow-pipe it decrepitates at first, but melts, by an increase of heat, into a greenish-yellow slag. It consists, according to Vauquelin, of 45 oxide of columbium, 55 of yttria and oxide of iron. It is found, along with gadolinite, at Ytterby, in Sweden, but is exceedingly rare.

YUCATAN; the most easterly state of the Mexican confederacy, in the form of a peninsula, jutting out into the gulf of Mexico, bounded north-west by the gulf of Mexico, south-east by the bay of Honduras, south by Guatamala, south-west by the state of Vera Cruz. The isthmus which connects it with the continent of North America is about 120 miles wide. Square miles, 30,000; population, 496,990; chief towns, Merida, the capital, Campeachy, and Valladolid. The soil is very fertile, and, when under proper cultivation, produces great crops of cotton, tobacco, pepper, the sugar-cane, indigo, maize, and other kinds of grain. The scarcity of water in the central parts of the state renders the crops variable; and years occur in which the poorer classes are driven to seek subsistence from roots. Cattle, fowls, and bees, are very numerous; wax and honey plentiful; but there are no mines. The forests abound with wild beasts. The principal article of commerce is logwood. The climate is hot, the summer beginning in April, and ending in September; but January and February are also warm. The British have some small set-

tlements on the east coast of Yucatan for procuring logwood, the chief of which is at Balize.

YUG, in the Hindoo theology; the name of the ages of the world. The duration of the universe was fixed by the deity at 12,000 divine years, each of which contains 360 human years; so that the whole amount is equal to 4,320,000 human years. This duration was divided into four ages, which are to each other as 4, 3, 2, 1. The first age, *Krita-Yug*, comprises 4000; the second *Treta-Yug*, 3000; the third, *Dwapar-Yug*, 2000; the fourth, *Kali-Yug*, 1000 divine years. After each age, is a period of darkness, the first of 800, the second of 600, the third of 400, and the fourth of 200 divine years, which complete the period of 12,000 years. The whole period is called *Maha Yug*, the great *Yug*, or *Sadir Yug*, a period of four ages. 1000 *Maha-Yugs* form the day of Brama, from morning to evening; and an equal number his night, when he sleeps; the consequence of which is the dissolution of the universe into its original elements; so that every thing is sunk in a great sea. When Brama wakes, every thing revives. 360 such days form Brama's year, and he lives 100 such years. Upon his death a general dissolution again takes place, and lasts 100 years of Brama: then Brama is born again, and the worlds begin their old alternation of existence and dissolution. The whole life of Brama, is one-day of Vishnu, from morning to evening. 360 such days make his year. He lives 100 years, and remains dead an equal period. Siva alone is immortal. This is evidently the doctrine of the votaries of Siva, while the worshippers of Vishnu claim a similar pre-eminence for their god. In the Bhagavat-Purana, it is further observed, that, during the day of Brama, or 1000 *Maha-Yugs*, fourteen dynasties (*manvantaras*) of men and gods follow each other; each, therefore, continues about 71 *Maha-Yugs*. Each has the name of its first ruler. We live in the seventh. Rhode has shown that Buddhism and Bramaism are mingled in this fable of the *Yugs*. The *Yugs* are also distinguished in a moral respect. As in the Persian, so in the Indian theology, virtue is made to decline in each successive age. It is represented under the figure of a steer, standing, in the first age, on four legs; in the second, on three; in the third, on two; and in the fourth, on one. The *Zend-Avesta* also says, in the first 1000 years Ormuzd and the good rule alone; in the second, Ahriman begins to appear in the third, the influence of Ormuzd and Ahriman is equal; and, in the fourth, Ahriman's power is superior. The present is the last age of the world, the *Kali-Yug*, which, according to the calculation of the Bramins, began thirty years after Krishna's death, or 3101 years before Christ; so that at present, in 1839, we live in the 4940th year of the *Kali-Yug*. Among those who were saved at the time of the third dissolution of the world, and passed over into the fourth *Yug*, was a pious king named *Kistnei*, under whose government virtue continued to flourish. But now the steer (the symbol of virtue) stands only on one foot, and charity is the chief virtue to be practised. At the end of this age, after Kalighi's appearance, fire and water will destroy every thing, and the first *Yug* will be repeated, the sun, moon, and all the planets, being in the same sign of the zodiac as at the beginning of the world. Besides this, the Indians reckon by several other eras. See *Epoch*; also *Hindoo Mythology*, in the article *India*.

YULE; the name formerly given to Christmas. (q. v.)

YUMNA. See *Jumna*.

YVERDUN, IVERDON, or IFFERTEN; a town of Switzerland, in Vaud, at the south end of the lake of Neufchatel, at the entrance of the river Orbe, on an island, sixteen miles north of Lausanne, thirty-four south-west of Berne, forty-four north-north-east of Geneva; population 4000. It is delightfully situated, is neatly built, and has a public library, and a brisk traffic, chiefly in the transit of goods—an advantage which it owes to its command of water carriage, boats going from it into the Rhine, by the lakes of Neufchatel and Bienne, and the rivers Thiel and Aar. It has also considerable manufactures of linen, calico, &c. At this place is the school of the celebrated, Pestalozzi, which was first established here in 1804, and an ancient castle appropriated to its accommodation by the government. There are several other establishments for education. The sulphur baths here were known even to the Romans.

YVERNOIS, Sir Francis d', a Genevan politician, was born at Geneva, in 1756, and received an excellent education in his native city. His restless ambition involved him in the disturbances which distracted the little republic, and he was banished in 1782. After the revolution in January 1789, he returned to Geneva, and became counsellor of state. But, being unable to prevent the interference of the French republic in the internal affairs of Geneva, or to play a prominent part after the democratic party had attained the ascendency, he went to England, and made various journeys in Europe as travelling tutor to lord Eardley. In the mean time, Geneva had been united to France in 1798; but Yvernois and others had been declared incapable of ever becoming French citizens. He afterwards settled in England, and published political and literary works, in which he expressed his hatred of France with eloquence and talent. This gained him the favour of the British government, and the king of England knighted him. After the downfall of the French empire, in 1814, the republic of Geneva appointed him its minister in London, whence he proceeded, in the same capacity, to the congress of Vienna. After Napoleon's second abdication, in 1815, he returned to Geneva. Among the writings of Yvernois are his *Réflexions sur la Guerre*, in which he shows the necessity of reducing France to her old limits; and his *Tableau des Pertes que la Révolution et la Guerre ont causées au Peuple Français*. Most of his other writings had only a temporary interest.

YVETOT; a town of Normandy, in France, ninety miles north-west of Paris, with about 10,000 inhabitants. It is the seat of some tribunals, and of considerable woollen, linen and cotton manufactures. The lords of this place bore the title of king from the year 524 till the time of Louis XI.

# Z

Z, the last letter of the English alphabet, is a sibilant and semivowel, representing the same sound which the Germans represent by *s*, or the soft sound of the English *s*, the only difference between *s* and *z* being that the breath is emitted less forcibly in pronouncing the latter: the organs of the mouth are in the same position in both cases. (For further observations connected with this point, see the article *S*.) The *z*, in German, has a compound sound, corresponding to our *ts;* and modern German writers, therefore, omit the *t*, formerly written before *z*, in some German words. In Italian, it is sometimes sounded like our *ts*, sometimes like *ds*. In Spanish, it corresponds to our *th*. In French, when pronounced at all, it has the sound of a forcible *s*. *Z* was originally a Greek letter (ζ). As a numeral, it signified two thousand, according to the verse—

*Ultima Z tenens, finem bis mille tenebit.*

When a dash was added at the top ($\overline{Z}$), it signified two thousand times a thousand. On French coins, Ż denotes those struck at Grenoble.

ZAARDAM, OR SAARDAM; a town in North Holland, near the Y, five miles north of Amsterdam; population, 10,717. It consists of two villages, East and West Zaardam. It carries on an active trade in timber, tar, train-oil, &c.; has extensive manufactures of ropes, tobacco, and paper; but the most important branch of its industry is and has long been, ship-building. It was here that the czar Peter the Great studied the art of shipbuilding; and the house which he occupied is still pointed out.

ZABIANS. See *Sabians.*

ZABIRA, GEORGE; a learned Greek, born in Sialista, in Macedonia, and educated in Thessalonica. About the year 1764, he went, as a clerk, to Hungary. At Colotscha, he learned Latin, and the modern European languages, and collected a library. He afterwards visited several German universities, and established himself at Szabadszallas, as a merchant. In 1795, he caused Cantemir's work on the Cantacuzeni (q. v.) and the Brancowani to be published. Among his manuscripts is the Θεατρον Ἑλληνικον, a biographical catalogue of all modern Greek authors who have lived since the conquest of Constantinople. He died Sept. 19, 1804.

ZACATECAS; formerly an intendancy, now a state of Mexico, bounded north by Durango, east by San Luis Potosi, south by Guanaxuato, and west by Guadalaxara; eighty-five leagues long, and fifty-one where widest, broad; square leagues, 2353; population, 272,901. It is a mountainous and arid tract, with a rigorous climate, and very thinly peopled. There are eleven convents for males, and four for females, in the state. The table-land, which forms the central part, rises to upwards of 6500 feet above the level of the sea. It is famous for its rich silver mines. The capital, of the same name, lies 240 miles north-west of Mexico; lon. 101° 35′ W.; lat. 22° 50′ N.; population, 30,000. It is situated in a mountainous country, in the vicinity of some of the richest silver mines in Mexico, which are wrought by great numbers. It is well built, and contains a college, an hospital, a number of churches, and a mint, in which were coined, from 1810 to 1826, 32,108,185 dollars. Several other towns, as Sombrerete, Fresnillo, Jerez, Pinos, and Nochisltlan, have a population varying from 14,000 to 18,000 souls. Maize, wheat, chile, &c., are among the products.

ZACH, FRANCIS, baron von, one of the most eminent astronomers and mathematicians of our day, was born at Presburg, in 1754, and died at Paris, of the spasmodic cholera, in 1832. After having entered the Austrian military service, and passed some years in London, he was appointed grand chamberlain to the duchess dowager of Saxe-Gotha, who then resided at Eisenberg, and, in 1804, and 1805, accompanied her on a tour through France. From 1787 to 1806, he had the direction of the observatory at Seeberg. After that time, he resided chiefly abroad, and accompanied the duchess to Paris and Italy. In the latter country, through his influence, an observatory was erected at Naples, and another near Lucca. Baron von Zach also contributed much to extend the field of astronomical science by his writings, in which are united clearness and profoundness. His Geographical Ephemerides, and the continuation of the same work under the titles of monthly Correspondence for promoting the Knowledge of the Heavens and the Earth, and *Correspondance Astronomique*, are works of great value. He also published several treatises on particular subjects, and was the author of many papers in different periodical publications. Of his works we will mention his treatise *L'Attraction des Montagnes et ses Effets sur les Fils-à-Plomb* (Avignon, 1814, 2 vols.); his *Tabulæ Montium Solis novæ et correctæ* (Gotha, 1792, 4to.); and his *Almanacca Genovese*, which he edited in Genoa.

ZACHARIÆ, JUST FREDERIC WILLIAM, one of the German authors who prepared the way for the advancement of German literature after the time of Gottsched, was born in 1726, and died in 1777, professor of belles-lettres in the Carolinum at Brunswick. His *Renomist*—the German word for disorderly students (see Russel's *Germany*)—a comic epos, published in 1742, and some other works, display humour. His works appeared in a second edition, in 2 vols. (Brunswick, 1772). An additional volume was published in 1781.

ZACHARIAH. See *Zechariah.*

ZACYNTHUS. See *Zante.*

ZADOC (*Sadoc*). See *Sadducees.*

ZAFFRE is the residuum of cobalt, after the sulphur, arsenic, and other volatile matters of arsenical cobalt, have been expelled by calcination. The zaffre that is commonly sold, and which comes from Saxony, is a mixture of oxide of cobalt with some vitrifiable earth. It is of a gray colour.

ZAFTLEEVEN, OR SACHTLEEVEN, HERMANN, one of the most skilful painters of landscapes, was born at Rotterdam, in 1609. He lived in Utrecht, and died in that city, in 1685. His views

exhibit the environs of Utrecht, or Rhenish scenery. D'Argenville says that Zaftleeven visited Italy; but the Dutch writers deny this. He portrays nature under serene and elevated aspects; a smiling heaven overarches his cities and mountains, and a warm air breathes itself over the sunny and retiring distance. His paintings are scattered in different places. Descamps gives a list of his works. Zaftleeven also employed the etching needle.—His brother *Cornelius*, born at Rotterdam, in 1612, was a successful painter of scenes from common life.

ZAGATAI. See *Tartary*.

ZAHARA, DESERT OF. See *Sahara*.

ZAHRINGEN; a village near Freiburg, in what was formerly the Austrian Brisgau, with the ruins of an ancient castle, from which the ancient dukes of Zähringen, the ancestors of the grand-dukes of Baden, derived their name.

ZAIMS, AND TIMARIOTES, are possessors of Turkish fiefs, who, according to a law of the sultan Amurath I., in the fourteenth century, are bound to furnish spahis, or cavalry, as the condition of enjoying their fiefs. The Porte maintains only about ten or twelve thousand spahis, who are paid by the government, and called *kapikuly*. The rest of the spahis are furnished by the possessors of *timars*. The number of all the zaims (i. e. such vassals as have a revenue of from 20,000 to 100,000 aspers annually from their fiefs) is about 6689. For every 5000 aspers, they must send one horseman into the field in time of war, so that a zaim cannot send less than four nor more than twenty spahis. The number of the timariotes, however, or of those vassals who have from 6000 to 19,999 aspers annually, amounts to 52,649. These must furnish one spahi for every 3000 aspers; therefore each of them from two to six spahis. Thus the minimum of their collective quotas is 134,054 men. In 1792, it was resolved to unite all the timars with the imperial domains, after the death of the possessors; upon which the government was to support the army. The number of troops, therefore, has not changed much. Besides these troops, the Porte maintains another corps of cavalry, consisting of the former rifle makers and armourers. This kind of cavalry, called *jebeddshy*, is divided into sixty ortas, each of which, according to rule, should contain 500 men; but the number is never complete, and the ortas together never contain more than 18,000 men. Since the introduction of the European military system into Turkey, and the abolition of the janizaries (in 1826), part of the cavalry has also received another organization. Yet in many provinces, the military fiefs still remain, and are held upon the conditions above mentioned.

ZIARE, OR CONGO; a river of Africa, which is supposed to rise in about lat. 10° S., and which takes a northerly course to lat. 3°, in Congo, after which it takes a south-west direction, and runs into the Atlantic at Fathomless point; lon. 12° 20′ E.; lat. 6° S. It is less than three miles wide at the mouth, has a very impetuous current, and pours a great mass of water into the ocean. In 1816, an expedition was fitted out from England to explore this river; but the company were unable to navigate the river, either with their sloop or with boats, farther than 120 miles. Leaving their sloop, they proceeded on foot 150 miles farther; but, meeting with insuperable difficulties, they were compelled to return.—See Tuckey's *Expedition to explore the Zaire or Congo* (4to., 1818).—It has been supposed by some, that the Zaire, or Congo, is the outlet for the waters of the Niger; but the discoveries of Lander have refuted this supposition. See *Niger*.

ZAJONCZEK, JOSEPH, prince, senator, general of infantry, viceroy of the kingdom of Poland, born, in 1752, at Kaminieck, of a noble but poor family, like other young Polish noblemen, entered the army, became, in 1784, lieutenant-colonel, in 1793 colonel and commander of a regiment. He served in the war of Poland against Russia, and was made major-general. But Poland was overcome, and Zajonczek, with many others, emigrated to France. On his way thither, he was arrested in Gallicia, together with his brother, and both were imprisoned in Josephstadt. When set at liberty, he went to Paris, and was made general of brigade in the French army in Italy. The Polish legion did great service in that war, and Zajonczek distinguished himself. He accompanied Napoleon to Egypt, and afterwards commanded a division of French troops in Italy. In 1812, he accompanied Napoleon to Russia, where he lost a leg. He then quitted the French army. In 1815, the emperor Alexander appointed him viceroy, or *namiestnik*, in Poland. In 1818, he was made a prince. Nicholas confirmed him, in 1825, in his dignities and privileges. He died at Warsaw, July 28, 1826.

ZALEUCUS; the lawgiver of the republic of Locris, a Greek colony in Græcia Magna. He lived, according to some, 500 B. C., and was a disciple of Pythagoras; according to others, he lived as early as the seventh century B. C. Only a few disconnected notices of his life and laws can be gleaned from ancient authors. His laws seem to have been very severe. In order to suppress extravagance of dress, he ordained that prostitutes alone should wear jewels and ornaments of gold. Adultery was to be punished by the loss of both eyes. The son of the lawgiver himself was convicted of this crime; the people, actuated by esteem for the father, prayed him to acquit his son; but Zaleucus remained inexorable. In order, however, to satisfy the demands of parental love, as well as the requisitions of the law, he condemned his son to lose one eye, to which he added one of his own. This is said to have had such an effect, that, as long as the lawgiver lived, no adultery was heard of in the republic of Locris. In order to maintain the authority of his laws, he ordained that every man who should propose a new law should appear with a rope round his neck, in order to be immediately strangled if the proposed law was not preferred to the existing one.

ZALUSKI; a Polish family, known in the literary and political history of their country.

*Andrew Stanislaus*, bishop of Cracow, died in 1758, and left his library of 20,000 volumes to the university of that city.

His brother, *Joseph Andrew*, bishop of Kiow, published the *Leges, Statuta, Consuetudines et Privilegia Regni Poloniæ* (Warsaw, 1732, fol.). His *Specimen Historicum Polonicæ Criticæ* is also much valued. He died in 1774.

A count *Joseph Zaluski*, aid-de-camp of the emperor Alexander, was made *curator* of the university of Cracow, in 1826. See *Cracow*.

ZAMBECCARI, FRANCESCO, count, celebrated as an aëronaut, was born in 1756, at Bologna, and was descended of an ancient family, one of the forty senatorial families of the city. He was carefully educated, and made great proficiency in mathematics. Having entered the Spanish naval service, Zambeccari was captured by the Turks and carried

to Constantinople, where he was put into the bagnio. His liberation was finally effected by the interposition of the Spanish ambassador; and the count made a tour in the Levant and in Africa, and afterwards visited the European capitals. He then returned to his native country, and occupied himself with the study of aëronautics. He had devised an ingenious contrivance for taking advantage of the different currents of air at different elevations, so as to give what direction he should choose to the balloon. His idea was to cause the balloon to rise or sink at pleasure by increasing or diminishing the quantity of gas, and to guide its course by oars. In 1812, he attempted to carry this project into execution, although the weather was highly unfavourable; but the balloon, having become entangled in a tree, took fire, and the unfortunate aëronaut perished, a victim to his zeal for science.

ZAMOISKI. Among several distinguished men of this name are,

1. *John Zamoiski* (in Latin, *Samoscius*), born in 1542, the greatest Polish statesman and scholar of his time. He studied at Paris and Padua, became chancellor of the realm and general-in-chief, and died in 1605. It was chiefly through his means that Sigismund III. obtained the Polish crown. He raised an army, partly at his own expense, and defended the frontiers of the republic against the Swedes, Russians and Tartars. At the same time, he promoted the sciences by inviting foreign scholars into the country, establishing libraries, and founding learned institutions. He wrote, among other works, *De Senatu Romano* (in Grævius's *Thes. ant. Rom.* I); *De perfecto Senatore.*

2. *Andrzey Zamoiski*, high chancellor, the distinguished defender of the independence of his country, was early a military officer of signal courage and talent, subsequently a senator and high chancellor (1764). He strove to suppress the disturbances at the election of king Stanislaus Poniatowski, and afterwards resigned all his offices, because he could no longer serve his country. In 1776, he accepted the invitation of the diet to prepare a digest of the laws, in which he restored the rights of the third estate (Polish, Warsaw, 1778, 3 vols., fol.; German, by Nikisch, Warsaw, 1780). The king approved of this excellent work, but the diet would not accept it. Soon after the great political change in 1791, the count died, in January, 1792. His name was every where held in reverence. He was a philosopher in the true sense of the word, just, wise and benevolent. He gave the first example of the abolition of bondage on his estates. His wife, Constantia, a princess Czartoryska, was an uncommonly accomplished and noble woman. She died in 1797.

ZAMOLXIS, the Getian; according to some, the slave of Pythagoras and his disciple; but, according to Herodotus, he belongs to an earlier age (Hist. iv, 94 and 96). He was esteemed in antiquity as a wise man, and one who conferred great benefits on his people. He is said to have taught them the immortality of the soul (Herodotus iv, 93), and to have given them wise laws; on which account divine honours were paid him after his death.

ZAMORIN. See *Calicut.*

ZAMOSC; the strongest fortress of the kingdom of Poland, in the woiwodeship of Lublin, between this place and Lemberg, in a south-eastern direction from Warsaw, on the river Wieprz; lon. 23° 15′ E.; lat. 50° 42′ N. In 1809, the Poles took it from the Austrians, and, in 1813, the Russians from the French. The place was an entailed estate of the Zamoiski family, and was built in the Italian style, by the famous general and chancellor John Zamoiski (q. v.), after he had defeated the archduke Maximilian of Austria. In 1820, the state bought the town, with the environs, from the senator count Stanislaus Kostka de Zamoiski. Zamosc was now deprived of its extensive suburbs, and changed into a fortress. The coat of arms of the Zamoiski family is still, or at least was till of late, preserved on the walls. The place contains a large palace, several other large buildings, among which is an arsenal, four churches, of which one is Greek, two convents, a theatre, &c. Population, exclusive of the garrison, 3500. There is here a gymnasium, a library, and a printing-office, all established by John Zamoiski, already mentioned.

ZAMPIERI. See *Dominichino.*

ZANESVILLE, a flourishing town and seat of justice for Muskingum county, Ohio, is situated on the east bank of Muskingum river, immediately adjoining the falls, in lat. 40° N., lon. 82° W. It contains between 3 and 4000 inhabitants On the falls have been erected several mills, among which are flour and saw mills, a rolling mill, a nail factory, a woollen factory, and a steam paper mill. The town has two glass factories.

ZANETTI, Antonio Maria, count, a distinguished connoisseur, who acquired great reputation for his taste and learning, and for his talent for engraving, was born at Venice, in 1680. At the early age of fourteen, he had already executed several engravings; and, after finishing his education, he visited the different schools of Italy, and at a later period went to England, for the purpose of examining the collection of the earl of Arundel, the finest specimens of which he copied. He expended his fortune in the collection of a cabinet of antiquities, the value of which may be estimated from the work of Gori upon the gems belonging to it—*Gemmæ Antiquæ Zanetti* (Venice, 1758, fol., with 80 plates). Zanetti likewise rediscovered the lost art of chiaro-scuro engraving, which had been invented by Carpi. Among the works of Zanetti, the *Lettere sulla Pittura, Scultura ed Architettura* (Rome, 1754, 7 vols., 4to.) are important, as illustrative of the history of art. He published several collections of engravings:—1. *Antiche Statue Greche e Romane che si trovano in Venezia* (fol.); 2. *Icones ex Musæo suo* &c., (fol., with 100 plates, 1743); and, 3. *Raccolta di varie Stampe a Chiaro-scuro* (with seventy-one wood-cuts and thirty other engravings). Zanetti died at Venice in 1766. His nephew *Antonio Maria*, the younger, librarian of St Mark's, in Venice, died in 1778, was also the author of several works upon art and antiquities.

ZANGUEBAR; the name given to a large territory of Africa, bordering on the Eastern sea, including the countries of Melinda, Magadoxo, Mongala, Jubo, Mozambique, and some others, extending from lat. 2° N. to 21° S. The name is said to import "the coast of the negroes," all the inhabitants being blacks, with curled woolly hair.

ZANNI, ZANNESCHI. See *Harlequin* and *Masks.*

ZANOTTI, Francesco Maria, born in 1692, at Bologna, was the son of a comedian, was educated in the college of the Jesuits, in 1718 was made professor of philosophy, and librarian, in 1723 secretary, and in 1766 president of the university of Bologna. He wrote poetry in Tuscan and Latin

verse, also five essays, containing rules for the different kinds of poetry. At the jubilee in Rome, in 1750, he delivered a eulogy on the fine arts, in the capitol. In a second oration, he attacked the first, and in a third refuted the second. These are distinguished for beauty of style, and deep and lofty thoughts, as are all of his philosophical and physical writings, especially his Morals and the dialogues on the pressure of bodies. His principal production is his Commentaries on the Academy, containing a history of this learned society, and an analysis of all the physico-mathematical treatises laid before it. The Memoirs of this society contain several treatises on geometrical, analytical, physical, and musical subjects, written by him. In his *De Viribus Centralibus*, he explains Newton's doctrine of the central forces. A collection of his works appeared at Bologna, in 1779. He died in 1777.—*Giampietro Cavazzoni Zanotti*, born at Paris in 1674, wrote several works relating to the history of the fine arts in Bologna. As secretary to the Clementine academy of painting at Bologna, he wrote *Storia dell' Accademia Clementina* (2 vols., fol., Bologna, 1739). He died in 1765.—*Eustachio Zanotti*, of Bologna, born in 1707, professor of astronomy there, died in 1782, is known by his observations on comets and the form of the earth; also by his optical and hydrometrical experiments.

ZANTE (anciently *Zacynthus*); one of the seven Ionian Islands, in the Mediterranean, situated to the south of Cephalonia, of irregular form, fifteen miles long, and eight broad; square miles, 160; population 40,000. In its aspect, it is the finest of the Ionian Islands, presenting, when viewed from the fort above the town of Zante, a prospect of vales and eminences richly cultivated, covered with vineyards, olive plantations, orange, and other fruit trees, and containing numerous hamlets or villages. The whole surface of the island presents traces of subterraneous fire, discovered in some parts by warm sulphureous springs, in others, by heat in the soil. It has springs of petroleum and mineral tar, which are productive. The climate, though very hot in summer, is not unwholesome. The chief products are currants, also olive oil, and wine; some cotton and silk. The corn raised is hardly equal to four months' consumption. See *Ionian Islands*.

*Zante*, the capital of the island, has a population of 20,000 souls; lon. 21° 8′ E.; lat. 37° 50′ N. It is the largest town in the republic of the Seven Islands, pleasantly situated at the bottom of a small bay, on a hill of gentle declivity. It resembles in its appearance an Italian town. The principal street, which traverses it in its whole length, is broad and handsome, bordered with well-built houses and churches, and has a foot-pavement. The houses are partly of brick, and partly of wood, and, on account of the frequency of earthquakes, seldom exceed one or two stories. The harbour is spacious; the environs exceedingly pleasant and picturesque. In 1820, several hundred houses were overthrown here by an earthquake. The island was in the possession of the Venicians, from the end of the fourteenth to the end of the eighteenth century. In 1797, it was taken by the French, and, in 1799, by the Russians. In 1815, it became one of the members of the Ionian republic.

ZANTHOPICRITE; the name given to a crystalline substance, extracted from the bark of the zanthoxilum of the Caribbee islands.

ZAPPI, Giovanni Battista Felice; born at Imola, in 1667, one of the best Italian poets of his age. After having studied law at Bologna, where he made so rapid progress that the decree of doctor was conferred upon him when he was only thirteen years old, he went to Rome, where he soon distinguished himself as a poet. He was one of the founders and chief ornaments of the academy of the Arcadians. His poems are graceful, especially his *canzoni* and madrigals, but at times artificial. Clement XI. gave him the hope of considerable benefices; but he died in 1719, without having obtained them. His wife, Faustina Maratti, daughter of the distinguished Roman painter Carlo Maratti, was equally distinguished for beauty and poetical talent.

ZAR. See *Czar*.

ZARLINO, Giuseppe, born in 1540, (according to Gerber, in 1520), at Chioggia, near Venice, on the Adriatic sea, died in Venice in 1599. He was one of the greatest of the theoretical musicians who preceded Rameau and Rousseau. He determined more accurately the relation of the major and minor third, and by his *Instituzioni armoniche* (Venice, 1562, 1573, folio), laid the foundation of a thorough treatment of harmony. As early as his eighteenth year, he appeared as an author, and wrote a number of works, published collectively, under the title of *Instituzioni armoniche* and *Dimostrazioni armoniche* (1589, 4 vols., folio). As a composer, he is chiefly known by a piece of music performed under his direction, as chapel-master in the St Mark's church, Venice, at the celebration of the victory of Lepanto. Much information respecting the music of the sixteenth century is contained in his works; but his style is not attractive.

ZARSKOJE SELO (i.e. Sara's Village, so called from a lady who owned it when it was yet a village) is an imperial pleasure castle, twenty-five wersts (about seventeen miles) south of St Petersburg, from which a highway leads to it through a very monotonous country. Catharine I. built a castle here, which Elizabeth enlarged and embellished in 1744, and to which Catharine II., whose favourite residence it was, gave its present splendour. The large palace, three stories high, is magnificently ornamented: even the outer cornices and other ornaments are gilt; yet most of it, with the exception of what Catharine II. changed or built herself, is in an old fashioned style. Among the principal objects of attention, are the great staircase; the saloon, lined with mirrors; the chapel; the porcelain room; and the amber room, in which the walls are covered from the floor to the ceiling with sculptures of amber. The rooms contain magnificent furniture and beautiful paintings. There is also a gallery of bronze figures, made by artists of the Petersburg academy. In the gardens, which are laid out in the English manner, by a German, are a hermitage, with statues and vases, Roman and Gothic temples, pyramids, several columns and obelisks, monuments, and triumphal arches, which Catharine II. caused to be erected to count Romanzoff and the brothers Orloff. (q. v.) The entrance of the garden is now adorned by a colossal triumphal arch of an antique form, consisting of cast iron, with the inscription, "Sacred to my dear companions in arms," erected by the emperor Alexander, after the wars of 1812, 1813 and 1814. Near this palace lies the town of Sofia, with which Zarskoje Selό is at present united, and where, some years ago, a lyceum, for the education of civil officers, was erected. The palace appropriated to this lyceum was burned down in 1820.

ZAUNER, Francis de, was born at Feldpatan, in German Tyrol, in 1746. He early evinced a decided taste for sculpture. In 1766, he went to Vienna, where he worked for five years with professor Schletterer. He studied with great zeal; and, a proposal having been made to set up some statues at Schönbrunn (q. v.), he offered to cast them. Prince Kaunitz (q. v.) ordered him to bring within fifteen days a model for a spring, representing the three largest rivers of Austria. The model met with approbation. It was executed on a large scale; and the empress Maria Theresa took the artist into favour. Zauner received, in 1776, assistance from the government to go to Rome, where he studied for four years. In 1781, he was made professor of sculpture in Vienna. He improved the manner of studying this art in the Austrian capital, and executed a number of works; among others, the colossal statue of the emperor Joseph II., which the emperor Francis II. caused to be erected, in honour of his uncle, in the Joseph square, in 1807. It is one of the largest statues in Europe. Zauner cast the statue in a manner invented by himself, which succeeded perfectly. He also executed the monument of the emperor Leopold II. in white marble, in the church of St Augustine. There are many busts, statues and bass-reliefs by this artist. Zauner died in 1822, in Vienna.

ZEA. See *Maize*.

ZEA, Francisco Antonio, was born at Medellin, in the province of Antioquia, in New Grenada, Oct. 20, 1770. He studied at the university of Bogotá, and, at an early age, attained very distinguished academic honours there. When the government undertook to explore the vegetable riches of the country, young Zea was associated with the learned Mutis in this commission. In 1794, he was imprisoned in consequence of the freedom of his observations upon political subjects, at the same time with don Antonio Narino and other lovers of liberty. The particular offence of which he was accused, was having participated in certain seditious meetings and compositions, tending to the independence of New Grenada. His trial lasted several years, during which he was held in confinement, first in America, and then subsequently in Spain, whither the decision of the cause was transferred; and, at the expiration of that time, he was discharged, it being considered that his long imprisonment had sufficiently punished him for his imprudence. But, when restored to liberty, he was not permitted to return to America, being obliged, on various pretexts, to reside in France, with a pension of 6000 francs. In 1802, he returned to Spain, and was made adjunct director of the botanic garden of Madrid, and, in 1804, director-in-chief, and professor of natural sciences, notwithstanding his anxiety for permission to revisit his native country. The revolution of Aranjuez, which found him engaged in scientific researches, drew him into the public service. He was nominated a member of the junta of *notables*, which met at Bayonne in 1808. Afterwards he had the direction of a part of the ministry of the interior, and, finally, was prefect of Malaga until the retreat of the French army. This event enabled him to terminate his banishment. In 1814, he embarked from England, and hastened to join Bolivar in his expedition against the Spaniards of Venezuela. Thenceforth, Zea became a party to all the exertions of the struggling patriots, as the friend, the adviser, and the political guide of Bolivar. He was successively intendant-general of the liberating army, president of the congress of Angostura, and vice-president of the republic of Columbia, and, finally, envoy extraordinary and minister plenipotentiary to all those courts in Europe to which he might think proper to address himself, being invested with the whole representation of Columbia, for every species of affairs. His commission is dated Dec. 24, 1819. Zea appeared in London in 1820, invested with these unlimited powers, and, although he did not succeed in obtaining an acknowledgment of the independence of his country, yet he was every where heard with respect, and negotiated a loan for £2,000,000 sterling with a company of English bankers at Paris, March 13, 1822. The terms of the loan were, as might be expected, rather unfavourable to the new republic, and, in the sequel, drew much obliquy upon Zea. Rumours arose that his powers were defective; but a full examination proved that the report was wholly unfounded, and the loan, although censured by the Colombian congress, was recognised and confirmed. The financial embarrassments of the republic ought not to occasion any reflections upon the memory of Zea, who did every thing for the interest of his country which circumstances would permit. He died at Bath, of an aneurism of the heart, Nov. 28, 1822, aged fifty-two years.

ZEALAND, or ZEELAND; a province of Holland, comprising the ancient county of Zealand and Dutch Flanders, composed chiefly of islands at the mouth of the Scheldt, namely, Schowen, Duivcland, Tholen, Walcheren, North and South Beveland, and Wolfersdyk. The continental part consists merely of a strip lying along the south bank of the Hond, or West Scheldt. The province is bounded north by the Hond, or West Scheldt, east and south by East Flanders, and west by West Flanders and the sea; in 1829, population 123,184; square miles, 625. The chief towns are Middleburg, Flushing, and Zierick-see. The surface is level, and lies so low that it is necessary to protect the country from inundation by strong dikes, which are kept up at great labour and expense. These dikes are from twenty to thirty yards broad at the bottom, and of sufficient width at the top for two carriages to pass abreast; yet the country has been exposed to heavy calamities from the sea's breaking over the dikes in storms. The soil is a rich, black mould, excellent for pasturage, and for the culture of madder, flax, cole-seed, &c. The exports are corn, madder, flax, salt, meat, linen yarn, rape seed, and oil. The air is damp from exhalations of fresh water, productive of bilious complaints and agues. The majority of the inhabitants are Calvinists; there are, also, some Catholics, Lutherans, and Mennonists. See *Netherlands*.

ZEALAND, or SEELAND; the largest of the Danish islands between the Cattegat and the Baltic, separated from Sweden by the Sound, and from Funen by the Great Belt; about sixty-five miles long from north to south, and sixty from east to west; square miles, 2800; population, 296,350. It has no mountains; but the surface is finely variegated, having small hills and fields of a fertile soil, intersected by canals, resembling in some parts, in summer, when the ground is covered with vegetation, the country of Lombardy. It produces large crops of corn, and has excellent pasture. Besides several towns of considerable importance, it contains the fortress of Elsinore, or Helsingör, and the capital

and royal residence, Copenhagen. See *Denmark*, and *Copenhagen*.

ZEALAND, NEW; two islands in the South Pacific ocean, discovered by the Dutch navigator Tasman, in 1642. He sailed along the eastern coast, and supposed it to be a part of the southern continent, then imagined to occupy these unknown regions. From the Dutch the newly-discovered country received the name of New Zealand. In 1769, Cook first discovered the strait which bears his name, and separates the two islands from each other, the northernmost of which is called Eaheinomauwe, and the southernmost Tavai-Poenamoo. They extend in their whole length about 800 miles, with an average breadth of about 100 miles, their position lengthwise being between the 48° and 34° of south latitude, and resembling, with respect to temperature, (after an allowance for the lower degree of heat in the southern hemisphere) that of the land between the south of Portugal and the north of France; pervading, we may say, but without exceeding, the most favoured part of the temperate region: and numerous witnesses of ample experience concur in describing the extremes of cold in winter and heat in summer as being within peculiarly narrow limits; which is to describe the climate as one of the most equable in the world. The two islands are intersected in the greater part of their length by a chain of mountains perpetually covered with snow, and higher, it is supposed, than the European Alps; from which it would be inferred, as is really the case, that the country abounds in streams and rivers always flowing: droughts, such as occur in New South Wales, have never been known, but, on the contrary, rain falls plentifully in every due season, though never to an inconvenient degree.

Cook's strait between the two islands, forms part of the direct track of vessels homeward bound from the Australian colonies; many such vessels go through Cook's Strait, while the others at present pass New Zealand at either its southern or northern extremity. Lying about 300 leagues east of the eastern shore of New Holland and Van Diemen's Land, these islands have recently become the theatre of an active commerce between the New Zealanders and the British colonists in that region. During the year 1830, the total tonnage of vessels cleared out from New South Wales for New Zealand was 5888 tons; and of seventy-eight vessels cleared out from Sydney, fifty-six were for New Zealand. These voyages were undertaken chiefly for the purpose of procuring New Zealand flax; but it has also been customary for the vessels to land parties on different parts of the coast, to prosecute the whale and seal fisheries in the bays, which are frequented, at certain seasons of the year, by the black whale and the seal. Establishments have also been formed for the purpose of procuring spars for shipping, and timber for house-building; and several large vessels have been built here by British mechanics, assisted by the natives. (Busby's *Authentic Information relative to New South Wales and New Zealand*, London, 1832.) The church missionary society and the Wesleyan missionary society have both had settlements on the northern island for a number of years. The stations of the former are at the Bay of Islands and Kidee Kidee, sixteen miles from that place. About a dozen missionaries, with their families, reside here, and have established schools for the instruction of the natives. These circumstances, and the difficulties occasioned by the conduct of runaway convicts from New South Wales, have led the British government to establish an agent or resident in New Zealand. New Zealand has often been pointed out as a fit place for an experiment in colonization; but the single circumstance of the occasional practice of cannibalism among the natives, seems to have been sufficient heretofore to prevent any such scheme from being carried into execution; although the fact is, that the New Zealanders are a much superior race to many which are not addicted to that horrible custom, and, what is above all things important, eminently improveable. A plan has at length been formed for realizing this desirable object by a body named the New Zealand Association, consisting of two classes of members; first, heads of families, and others, who have resolved to establish themselves in the proposed colony; and, secondly, a small body of public men, who, as a committee, have undertaken the task of carrying the measure into execution. These public men are of all parties; the list contains, amongst others, the names of Mr F. Baring, the earl of Durham, Walter F. Campbell of Islay, Esq., Sir George Sinclair, and Sir William Molesworth, all of them members of the legislature. They have published a small volume, detailing their plans, and describing the country. (London, 1837.)

Among the latest accounts of New Zealand, are Cruise's *Journal of ten Months' Residence in New Zealand* (London, 1823); Earle's *Nine Months' Residence in New Zealand, in* 1827, (London, 1832); and the work of Busby, above mentioned. The fifth volume of the Library of Entertaining Knowledge, entitled the *New Zealanders*, contains a full and interesting view of the islands and their inhabitants. From the latter work, we take the liberty of extracting the following interesting passages regarding New Zealand and its inhabitants.

In general, the New Zealanders are a tall race of men, many of the individuals belonging to the upper classes being six feet high and upwards. They are also described as strong, active, and almost uniformly well-shaped. Their hair is commonly straight, but sometimes curly: Crozet says he saw a few of them with red hair. Cook describes the females as far from attractive; but other observers give a more flattering account of them. Mr Savage, for example, assures us that their features are regular and pleasing; and he seems to have been much struck by their "long black hair and dark penetrating eyes," as well as "their well-formed figure, the interesting cast of their countenance, and the sweet tone of their voice." Captain Cruise's testimony is almost equally favourable. The dress of the two sexes is exactly the same, and consists of an inner mat or tunic, fastened by a girdle round their waists, and an upper cloak, which is made of very coarse materials for ordinary wear, but is of a much finer fabric, and often, indeed, elaborately ornamented, when intended for occasions of display. Both these articles of attire are always made of the native flax, of which we shall immediately give an account. The New Zealanders wear no covering either for the head or the feet, the feathers with which both sexes ornament the head being excepted. The faces of the males are tattoed.

The food upon which they chiefly live is the root of the fern-plant, which grows all over the country. This root, sometimes swallowed entirely, and sometimes only masticated, and the fibres rejected after the juice has been extracted, serves the New Zea-

landers not only for bread, but even occasionally for a meal by itself. When fish are used, they do not appear, as in many other countries, to be eaten raw, but are always cooked, either by being fixed upon a stick stuck in the ground, and so exposed to the fire, or by being folded in green leaves, and then laid between heated stones to bake. But little of any other animal food is consumed, birds being killed chiefly for their feathers, and pigs being only produced on days of special festivity. The first pigs were left in New Zealand by Captain Cook, who made many attempts to stock the country both with this and other useful animals, most of whom, however, were so much neglected, that they soon disappeared. Cook likewise introduced the potatoe into New Zealand; and that valuable root appears to be now pretty generally cultivated throughout the northern island. The only agricultural implements, however, which the natives possess are of the rudest description; that with which they dig their potatoes being merely a wooden pole, with a cross-bar of the same material fixed to it about three feet from the ground. The labours of agriculture in New Zealand are, in this way rendered exceedingly toilsome, by the imperfection of the only instruments which the natives possess. Hence, principally, their extreme desire for iron. Mr Marsden, in the Journal of his Second Visit, gives us some very interesting details touching the anxiety which the chiefs universally manifested to obtain agricultural tools of this metal.

Taken altogether, New Zealand presents a great variety of landscape, although, even where the scenery is most subdued, it partakes of a bold and irregular character, derived not more from the aspect of undisturbed nature, which still obtrudes itself every where among the traces of commencing cultivation, than from the confusion of hill and valley which marks the face of the soil, and the precipitous eminences, with their sides covered by forests, and their summits barren of all vegetation, or terminating perhaps in a naked rock, that often rises close beside the most sheltered spots of fertility and verdure. If this brokenness and inequality of surface oppose difficulties in the way of agricultural improvement, the variety and striking contrasts thereby produced must be often at least highly picturesque; and all, accordingly, who have visited New Zealand, agree in extolling the mingled beauty and grandeur which are profusely spread over the more favoured parts of the country, and are not altogether wanting even where the general look of the coast is most desolate and uninviting. The southern island, with the exception of a narrow stripe along its northern shore, appears to be, in its interior, a mere chaos of mountains, and the region of perpetual winter; but even here, the declivities that slope down towards the sea are clothed, in many places to the water's edge, with gigantic and evergreen forests; and more protected nooks occasionally present themselves, overspread with the abundance of a teeming vegetation, and not to be surpassed in loveliness by what the land has any where else to show. The bleakness of the western coast of this southern island, indeed, does not arise so much from its latitude as from the tempestuous north-west winds which seem so much to prevail in this part of the world, and to the whole force of which it is, from its position, exposed. The interior and eastern side of the northern island owe their fertility and their suitableness for the habitation of man principally to the intervention of a considerable extent of land, much of which is elevated, between them and the quarter from which these desolating gales blow. The more westerly portion of it seems only to be inhabited in places which are in a certain degree similarly defended by the surrounding high grounds. In these, as well as in the more populous districts to the east, the face of the country, generally speaking, offers to the eye a spread of luxuriant verdure, the freshness of which is preserved by continual depositions of moisture from the clouds that are attracted by the mountains, so that its hue, even in the heat of midsummer, is peculiarly vivid and lustrous. Much of the land, both in the valleys and on the brows of the hills, is covered by groves of majestic pine, which are nearly impervious, from the thick underwood that has rushed up every where in the spaces between the trees; and where there is no wood, the prevailing plant is a fern, which rises generally to the height of six or seven feet. Along the skirts of the woodlands flow numerous rivers, which intersect the country in all directions, and several of which are navigable for miles up by ships of considerable burthen. Various lines of communication are in this way established between the opposite coasts of the northern island; while some of the minor streams, that rush down to the sea through the more precipitous ravines, are interrupted in their course by magnificent cataracts, that give additional effect to the other features of sublimity and romantic beauty by which the country is distinguished. Many of the rocks on the coast are perforated,—a circumstance which proceeds from their formation.

The climate of New Zealand, in so far as regards the extremes of heat and cold that are felt in the country, is decidedly temperate. During nearly ten months that Captain Cruise was in the northern island, from about the middle of February to the beginning of December, the general range of the thermometer was between 50° and 75°, nor did it ever descend below 40°, or rise above 80°. The coldest day marked, we believe, is the 4th of July, when it stood at the former elevation; and one of the warmest, the 4th of April, when it rose to within two degrees of the latter. A country thus situated, is placed in the very happiest medium between the torrid and the frigid. The prevalence of stormy weather, especially on the west coast, forms the chief exception to the general excellence of the climate of New Zealand. The quality of the soil of this country may be best estimated from the profuse vegetation with which the greater part of it is clothed, and the extraordinary vigour which characterizes the growth of most of its productions. The botany of New Zealand has as yet been very imperfectly investigated, a very small portion of its native plants having been either classified or enumerated. From the partial researches, however, that have been made by the scientific gentlemen attached to Captain Cook's expeditions, and subsequent visitors, there can be no doubt that the country is rich both in new and valuable herbs, plants, and trees, as well as admirably adapted for the cultivation of many of the most useful among the vegetable possessions of other parts of the world. The New Zealanders had made considerable advances in agriculture even before Captain Cook visited the country; and that navigator mentions particularly, in the narrative of his first voyage, the numerous patches of ground which he observed all along the east coast in a state of cultivation. Since

the commencement of the intercourse of the New Zealanders with Europe, the sphere of their husbandry has been considerably enlarged, by the introduction of several most precious articles which were formerly unknown to them. Captain Cook, in the course of his several visits to the country, both deposited in the soil, and left with some of the most intelligent among the natives, quantities of such useful seeds, as those of wheat, pease, cabbage, onions, carrots, turnips, and potatoes; but although he had sufficient proofs of the suitableness of the soil and climate to the growth of most of these articles, which he found that even the winter of New Zealand was too mild to injure, it appeared to him very unlikely that the inhabitants would be at the trouble to take care even of those whose value they in some degree appreciated. With the exception, in fact, of the turnips and potatoes, the vegetable productions which Cook took so much pains to introduce, seem to have all perished. The potatoes, however, have been carefully preserved, and are said to have even improved in quality, being now greatly superior to those of the Cape of Good Hope, from which the seed they have sprung from was originally brought. In more recent times, maize has been introduced into New Zealand; and the missionaries have sown many acres in the neighbourhood of the Bay of Islands, both on their own property and on that of the native chiefs, with English wheat, which has produced an abundant return.

Of the lofty forests of New Zealand, considered as a mere ornament to the country, all who have seen them speak in terms of the highest admiration. Mr Anderson (the surgeon whom Cook took with him on board the Resolution in his third voyage) describes them as "flourishing with a vigour almost superior to anything that imagination can conceive, and affording an august prospect to those who are delighted with the grand and beautiful works of nature." "It is impossible," says Mr Nicholas, "to imagine, in the wildest and most picturesque walks of nature a sight more sublime and majestic, or which can more forcibly challenge the admiration of the traveller, than a New Zealand forest." And indeed, when we are told that the trees rise generally to the height of from eighty to a hundred feet, straight as a mast and without a branch, and are then crowned with tops of such umbrageous foliage, that the rays of the sun, in endeavouring to pierce through them, can hardly make more than a dim twilight in the lonely recesses below, so that herbage cannot grow there, and the rank soil produces nothing but a thick spread of climbing and intertwisted underwood, we may conceive how imposing must be the gloomy grandeur of these gigantic and impenetrable groves. In the woods in the neighbourhood of Poverty Bay, Cook says he found trees of above twenty different sorts, altogether unknown to any body on board; and almost every new district which he visited, afterwards presented to him a profusion of new varieties. Among those which the natives principally make use of, are the *henow*, from which they extract a black dye, and the *vow*, a species of cork tree. But the trees that have as yet chiefly attracted the attention of Europeans, are certain of these more lofty ones of which we have just spoken. These trees had attracted Cook's attention in his first voyage, as likely to prove admirably adapted for masts, if the timber, which in its original state he considered rather too heavy for that purpose, could, like that of the European pitch-pine, be lightened by tapping; they would then, he says, be such masts as no country in Europe could produce. Crozet, however, asserts, in his account of Marion's voyage, that they found what he calls the cedar of New Zealand to weigh no heavier than the best Riga fir. Of late years the attention of our own government has been turned to the capabilities of this wood, and its entire suitableness for the most important purposes of ship-building has been sufficiently ascertained. It was in order to obtain a cargo of spars for top-masts that the Dromedary, in which Captain Cruise sailed, was directed to proceed to New Zealand, in 1820. This ship had already been provided with a fore-top-gallant-mast of New Zealand timber, which had been brought to England by the Catharine whaler, and of which Captain Cruise says, "it was well tried during its return to its native country, and proved itself to be, in seamen's phrase, a *stick* of first-rate quality."

According to Captain Cruise there are two kinds of trees known in New Zealand, which are fit for masts for large ships; the one of which is called by the natives *kaikaterre*, the other *cowry* or *cowdy*. They both grow to an immense height without a branch; but the cowry seems to be the tallest, and is also to be preferred on other accounts. It is not, however, so easily procured as the other, being to be sought for frequently on the tops of the highest hills, from which it is scarcely possible to get it conveyed to the seaside; whereas the kaikaterre is found generally in low swampy ground, often on the banks of rivers, so that little difficulty, of course, is experienced in bringing it on board. It was the cowry which the Dromedary was directed, if possible, to procure; but she was obliged at last to come home with a cargo of the other timber, the cowry forests being found to be at too great a distance from any place of embarkation in the Bay of Islands, to make it practicable for the spars to be conveyed to the ship; and the Captain having declined to go up the Shukehanga river, the banks of which were ascertained to be clothed with that tree, from an apprehension of not being able to pass the bar which lies across its mouth. It has since been stated in the *Quarterly Review*, that the spars brought from New Zealand have been "found on trial to be of equal gravity with Riga spars, and to possess a greater degree of flexibility, as well as of strength, than the very best species of fir procured from the north." "The wood of this tree," (the cowry,) it is added, "is much finer grained than any timber of the pine tribe; and the trunks are of such a size as to serve for the main and fore-top-masts of the largest three-deckers." In a note, it is said, "the Prince Regent of one hundred and twenty guns is supplied with them; they have also been used in sea-going ships, and the reports of their qualities are most favourable." The same writer also informs us, that the cowry, "though coniferous, is not allied to the pine tribe, but is a species of the genus which Rumphius describes under the name of Damanara, which affords the pitch or resin used by the natives of the Oriental Archipelago, and which is of a different genus from that tree which in India produces the dammer."

The only other vegetable production of New Zealand which we can afford to notice, is one that has of late attracted a great deal of attention, both in this country and in other parts of Europe—we mean the plant from which the natives fabricate not only their fishing lines and nets, and such other

cordage as they require, but also the cloaks, or mats, as they have been somewhat improperly called, which form their clothing. This plant is repeatedly noticed by Cook; and Mr Anderson describes the flax produced from it as of a silky fineness, and superior to any thing we possess. In the neighbourhood of Queen Charlotte's Sound, in the southern island, it grows, he says, everywhere near the sea, and in some places a considerable way up the hills, springing up from the earth in bunches or tufts, with sedgelike leaves, and bearing on a long stalk, yellowish flowers, which give place to long roundish pods, filled with very thin, shining, black seeds. This is very nearly the description of it given by Mr Nicholas, who saw it in the northern island, where he found it flourishing with equal luxuriance in the most exposed as in the most sheltered situations, and growing to the height of from five to seven feet. It bears a strong resemblance, he says, to our common flag, only that the stem is much thicker, and the flowers less expanded, and of a red colour. It belongs to the genus to which Linnæus gives the name of Phormium; and seven varieties of it have already, it seems, been discovered in New Zealand. Of these, one is particularly described as remarkable for the facility with which its boon, or useless vegetable matter, admits of being separated from the fibres. Fibre of a peculiarly silky lustre and softness is also said to be produced from another species, which is understood to grow in the more southern parts of the country. Valuable, however, as is the phormium for the purposes to which alone it is applied in New Zealand, it would appear that the attempts which have been made to fabricate from it what is properly called cloth, have not hitherto been attended with a favourable result. Some years ago, a quantity of hemp that had been manufactured from the plant at Sydney, in New South Wales, was sent to be woven at Knaresborough; but "the trial," it is stated, "did not succeed to the full satisfaction of the parties."

Among the useful plants for which we are indebted to New Zealand, is the summer spinach (*tetragonia expansa*—Murray), which was discovered in Cook's first voyage by Sir Joseph Banks, and was "boiled and eaten as greens" by the crew. It was afterwards seen by Forster at Tongataboo, though it was not used by the natives; but Thunberg found the Japanese acquainted with its value as a pot-herb. It was introduced into Kew Gardens in 1772; but the first account of it as a vegetable worthy of cultivation, was published by Count D'Auraches in the Annales d'Agriculture for 1809. Its chief advantage lies in the leaves being fit for use during the summer, even in the driest weather, up to the setting in of the frosts, when the common spinach is useless; but it is not reckoned of so fine a flavour as that plant. The Rev. J. Bransby says, that the produce of three seeds (which must be reared by heat before planting out) supplied his own table, and those of two of his friends, from June till the frost killed it. The plants should be six feet asunder, and, to save room, planted on ridges two feet high.

As yet, the mineralogy of New Zealand has been as imperfectly investigated as its botany. A blue pigment, which the natives make use of to paint their faces, appears to be manganese. They also, as has been already mentioned, make certain of their weapons, and carving tools, of a green talc, or jasper stone, which is found only in the southern island, and, at least, before they became acquainted with iron, used to be accounted by themselves a very precious article. Captain Cook remarked, on his first visit, the great quantities of iron-sand which were brought down to the shore by every little rivulet of fresh water from the interior, and regarded the fact as a demonstration that there was ore of that metal not far inland. Mr Nicholas, while in the country, procured one or two pieces of pumice stone, which the natives made use of in polishing their spears, and likewise some obsidian or volcanic glass; but he seems to think that these substances are not produced in New Zealand; although, in that case, it would not be easy to conceive where the inhabitants could have obtained them.

The native land animals of New Zealand are not numerous. The most common is said to be one resembling our fox-dog, which is sometimes eaten for food. It runs wild in the woods, and is described by Mr Savage as usually of a black and white skin, with pricked up ears and the hair rather long. But it may perhaps be doubted if even this quadruped is a native of the country. There are in New Zealand a few rats, and bats; and the coasts are frequented by seals of different species. One of the natives told Captain Cook that there was in the interior a lizard of eight feet long, and as thick as a man's body, which burrowed in the ground, and sometimes seized and devoured men. This animal, is probably an alligator.

There are not many species of insects, those seen by Mr Anderson, who accompanied Cook, being only a few dragon-flies, butterflies, grasshoppers, spiders, and black ants, vast numbers of scorpion flies, and a sand-fly which is described as the only noxious insect in the country. It insinuates itself under the foot, and bites like a mosquito.

The birds of New Zealand are very numerous, and almost all peculiar to the country. Among them are many sorts of wild ducks, large wood-pigeons, sea-gulls, rails, parrots, and paroquets. They are generally very tame. Rutherford states, that during his long residence he became very expert, after the manner of the natives, in catching birds with a noosed string, and that he has thus caught thousands of ground parrots with a line about fifty feet long. The most remarkable bird is one to which Cook's people gave the name of the mocking-bird, from the extraordinary variety of its notes. There is also another which was called by the English the poe, or poi bird, from a little tuft of white curled feathers which it has under its throat, and which seemed to them to resemble certain white flowers worn as ornaments in the ears by the people of Otaheite, and known there by a similar name. This bird is also remarkable both for the beauty of its plumage and the sweetness of its note. Its power of song is the more remarkable as it belongs to the class of birds which feed on honey, whose notes are generally not melodious.

One of the chief sources of natural wealth which New Zealand possesses, consists in the abundance and variety of the fish which frequent its coasts. Wherever he went, Captain Cook, in his different visits to the two islands, was amply supplied with this description of food, of which he says, that six or eight men, with hooks and lines, would in some places catch daily enough to serve the whole ship's company. Among the different species which are described as being found, we may mention mackerel, lobsters, crayfish, a sort called by the sailors cole.

fish, which Cook says was both larger and finer than any he had seen before, and was in the opinion of most on board, the highest luxury the sea afforded them; the herring, the flounder, and a fish resembling the salmon. To these may be added, besides many other species of shell-fish, mussels, cockles, and oysters. The seas in the neighbourhood of New Zealand also, we ought not to forget to add, are much frequented by whales, which, besides the value of their blubber, are greatly prized by the natives for the sake of their flesh, which they consider a first-rate delicacy. The New Zealanders are extremely expert in fishing. They are also admirable divers, and will bring up live fish from the deepest waters, with the greatest certainty. The hooks and other implements for fishery, which they make of bone, are of various forms.

The first and most conspicuous quality in the character of the New Zealanders, is their inordinate passion for war. The wars of these savages are maintained and perpetuated both by their love of contention and bloodshed, and by that spirit of revenge which seems to be more implacable in them than in almost any other people on earth. The law of retaliation in its most rigorous literality is their only rule for reconcilement of differences; and so long as the demands of this inexorable principle remain unsatisfied, the two parties can only know each other as enemies. "When we ask the chiefs," writes one of the missionaries in 1827, "when their wars with each other will terminate, they reply, 'never; because it is the custom of every tribe which loses a man, not to be content without satisfaction: and nothing less than the death of one individual can atone for the death of another.'" Many other barbarous nations continue in a state of war, for no weightier reasons. And in truth many of the wars among civilized nations have originated in no more rational object; and whether the pretext has been to maintain a tottering dynasty, or to keep possession of a useless territory, the real object has been the indulgence of national animosity.

The courage of the New Zealanders, though, in a fair field, of the most fearless description, and implying extraordinary indifference to danger and death, it is nevertheless mixed up with a spirit of bravado, which may seem to our notions nearly as inconsistent an accompaniment of that quality, as the ferocity and cruelty by which, among this people, its lustre is also so considerably impaired. But we must not expect from savages the refinement, either in this or any other feeling, which can only be taught by a long habit of subduing natural emotion and of withholding their expression, by reflections, and out of deference to the customs and sentiments of a polished state of society. In the New Zealand warrior the hatred or contempt for his enemy, of which his heart is full, speaks out in every word, tone, and gesture. He defies him to the combat with every contortion of limb and countenance that he can think of most significant of mockery and insult; and after he has vanquished and slain him he vents the residue of his rage and scorn in a profusion of indignities on his dead body. His notion of strength and courage expresses itself with the same coarse frankness on every occasion. If he deems himself to be more powerful or more valorous than another man, he is very likely to insult him for the mere sake of displaying his superiority.

The New Zealanders, as is well known, eat those enemies who are slain or taken in battle, all but the head, which is smoked and preserved as a trophy of war. The eating of human flesh among this people is not merely an occasional excess, prompted only by the phrenzy of revenge, but it is actually resorted to as a gratification of appetite, as well as of passion. It is very probable, however, that the practice may have had its origin in those vindictive feelings which mix, to so remarkable a degree, in all the enmities and wars of these savages. This is a much more likely supposition than that it originated in the difficulty of procuring other food; in which case, as has been remarked, it could not well have, at any time, sprung up either in New Zealand or in almost any other of the countries in which it is known to prevail. Certain superstitious notions, besides, which are connected with it among this people, sufficiently indicate the motives which must have first led to it; for they believe that, by eating their enemies, they not only dishonour their bodies, but consign their souls to perpetual misery. This is stated by Cook. Other accounts, which we have from more recent authorities, concur in showing that the person who eats any part of the body of another whom he has slain in battle, fancies he secures to himself thereby a portion of the valour or good fortune, which had hitherto belonged to his dead enemy. The most common occasion, too, on which slaves are slain and eaten, is by way of an offering to the manes of a chief or any of his family who may have been cut off in battle.* All

* It was my lot (says Mr Earle) to behold cannibalism in all its horrors. One morning about eleven o'clock, after I had just returned from a long walk, captain Duke informed me he had heard, from very good authority (though the natives wished to keep it a profound secret), that in the adjoining village, a female slave named Matowe had been put to death, and that the people were at that very time preparing her flesh for cooking. At the same time he reminded me of a circumstance which had taken place the evening before. Atoi had been paying us a visit, and, when going away, he recognised a girl who he said, was a slave that had run away from him; he immediately seized hold of her, and gave her in charge to some of his people. The girl had been employed in carrying wood for us; Atoi's laying claim to her had caused us no alarm for her life, and we had thought no more on the subject; but now to my surprise and horror, I heard this poor girl was the victim they were preparing for the oven! Captain Duke and myself were resolved to witness this dreadful scene. We therefore kept our information as secret as possible, well knowing that if we had manifested our wishes, they would have denied the whole affair. We set out, taking a circuitous rout towards the village; and being well acquainted with the road, we came upon them suddenly, and found them in the midst of their abominable ceremonies. On a spot of rising ground, just outside the village, we saw a man preparing a native oven, which is done in the following simple manner:—A hole is made in the ground, and hot stones are put within it, and then all is covered up close As we approached we saw evident signs of the murder which had been perpetrated; bloody mats were strewed around, and a boy was standing by them actually laughing; he put his finger to his head, and then pointing towards a bush. I approached the bush, and there discovered a human head. My feelings of horror may be imagined as I recognised the features of the unfortunate girl I had seen forced from our village the preceding evening! We ran towards the fire, and there stood a man occupied in a way few would wish to see. He was preparing the four quarters of a human body for a feast; the large bones, having been taken out, were thrown aside, and the flesh being compressed, he was in the act of forcing it into the oven. While we stood transfixed by this terrible sight, a large dog, which lay before the fire, rose up, seized the bloody head, and walked off with it into the bushes; no doubt to hide it there for another meal! The man completed his task with the most perfect composure, telling us, at the same time, that the repast would not be ready for some hours! Here stood captain Duke and myself, both witnesses of a scene which many travellers have related, and their relations have invariably been treated with contempt; indeed, the veracity of those who had the temerity to relate such incredible events, has been every where questioned. In this instance it was no warrior's flesh to be eaten; there was no enemy's blood to drink, in order to infuriate them. They had no revenge to gratify; no plea could they make of their passions having been roused by battle, nor the excuse that they eat their enemies to perfect their triumph. This was an action of unjustifiable cannibalism. Atoi, the chief, who had given orders for this cruel feast, had only the night before sold us four pigs for a few pounds of powder; so that he had not even the excuse of want of food. After captain Duke and myself had consulted with each other, we walked into the village, determined to charge Atoi with his brutality. Atoi received us in his usual manner; and his handsome open coun-

this would go to prove that the cannibalism of the New Zealander had, on its first introduction, been intimately associated with certain feelings or notions which seemed to demand the act as a duty, and not at all with any circumstances of distress or famine which compelled a resort to it as a dire necessity. There is too much reason for apprehending, however, that the unnatural repast, having ceased in this way to be regarded with that disgust with which it is turned from by every unpolluted appetite, has now become an enjoyment in which they not unfrequently indulge without any reference to the considerations which originally tempted them to partake of it. Indeed, such a result, instead of being incredible or improbable, would appear to be almost an inevitable consequence of the general and systematic perpetration, under any pretext, of so daring an outrage upon nature, as that of which these savages are, on all hands, allowed to be guilty.

Unacquainted as the New Zealanders are with anything deserving of the name of science, and insignificant as is the progress they have made in the arts, their intellectual powers are evidently of a superior order. Such of them as have come in contact with European civilization have in general manifested extraordinary quickness and tact in catching its spirit, and adapting themselves to the new opinions and manners to which they were introduced. And all that we are told of them shows acuteness, reflection, readiness, fertility of resources, and the other faculties and habits of mind that go to make up a commanding intellectual organization. In the few arts which are known among them, they display exceeding neat-handedness and ingenuity, and even no contemptible portion of taste and elegance. Nor are they without a genius for the higher exercises of the imagination. Their music is spoken of as superior to that of many of the other South Sea Islands; they possess a body of national poetry, which is constantly receiving additions as new events awaken the fancy of their bards; and eloquence in the council is as indispensible a qualification of their chiefs and warriors as valour in the field. Among all orders of the people much time is spent in conversation, in which they discuss the general concerns of the tribe, taking, as might be expected, especial interest, in whatever relates to their chief and his family. But other topics also obtain their eager attention, whenever they enjoy the rare opportunity of acquiring any information respecting what lies beyond the very bounded sphere of their own experience and traditionary knowledge. Mr Marsden, who, during his several journeys through the interior of the country, saw more of their domestic habits than any one else who has attempted to give us a picture of New Zealand society, found them every where both ready and anxious to listen to him, when he addressed them even on what may be called scientific subjects, and most intelligent in the questions they asked him, and the remarks they made. After the work of the day was over, they used to crowd around him in the evenings, to hear him dispense to them the wisdom of Europe; and not only agriculture and navigation, but the general principles of geography and astronomy were often the matter of his discourse, which would sometimes run far into the night before his auditors were weary, or thought of repose. Nor was it found by any means impossible or difficult to convince them of the folly of some of their prejudices, when the reason of the thing admitted of being plainly stated to them. They are much less disposed, however, than most other uncivilized tribes, and the fact is greatly to the credit of their thinking powers, to receive any opinion merely upon the assertion even of a white man. Upon all subjects they question and cross-question those who attempt to instruct them, until they are satisfied with the explanation given. Naturally suspicious, a consequence partly of the inquisitive and penetrating character of their understandings, and much accustomed themselves to conceal the object they actually have in view, and to proceed to it by an indirect course, they generally endeavour very anxiously, when they meet with a stranger, to acertain the motives of any conduct they see him pursue.

Several of the most conspicuous deformities of the New Zealand character originate in the abuse and perversion of intellectual powers, which, properly trained, would carry them forward rapidly in the career of social improvement and happiness. They are not a people sunk in sloth, and abandoned to an enervating luxury, as has been found to be

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tenance could not be imagined to belong to so savage a monster as he had proved himself to be. I shuddered at beholding the unusual quantity of potatoes his slaves were preparing to eat with the infernal banquet. We talked coolly with him on the subject; for as we could not prevent what had taken place, we were resolved to learn, if possible, the whole particulars. Atoi at first tried to make us believe he knew nothing about it, and that it was only a meal for his slaves; bnt we had ascertained it was for himself and his favonrite companions. After various endeavours to conceal the fact, Atoi frankly owned that he was only waiting till the cooking was completed to partake of it. He added, that knowing the horror we Europeans held these feasts in, the natives were always most anxious to conceal them from us, and he was very angry that it had come to our knowledge; but, as he had acknowledged the fact, he had no objections to talk about it. He told us that human flesh required a greater number of hours to cook than any other; that if not done enough, it was very tough, but when sufficiently cooked, it was as tender as paper. He held in his hand a piece of paper which he tore in illustration of his remark. He said the flesh then preparing would not be ready till next morning; but one of his sisters whispered in my ear that her brother was deceiving us, as they intended feasting at sunset. We inquired why and how he had murdered the poor girl. He replied, that running away from him to her own relations was her only crime. He then took us outside the village, and showed us the post to which she had been tied, and laughed to think how he had cheated her:—'For,' said he, 'I told her I only intended to give her a flogging; but I fired, and shot her through the heart!' My blood ran cold at this relation, and I looked with feelings of horror at the savage while he related it. Shall I be credited when I again affirm, that he was not only a handsome young man, but mild and genteel in his demeanour? He was a man we had admitted to our table, and was a general favourite with us all; and the poor victim to his bloody cruelty was a pretty girl of about sixteen years of age! While listening to this frightful detail, we felt sick almost to fainting. We left Atoi, and again strolled towards the spot where this disgnsting mess was cooking. Not a native was now near it; a hot fetid steam occasionally bursting from the smothered mass; and the same dog we had seen with the head now crept from beneath the bushes, and sneaked toward the village; to add to the gloominess of the whole, a large hawk rose heavily from the very spot where the poor victim had been cut in pieces. My friend and I sat gazing on this melancholy place; it was a lowering gusty day, and the moaning of the wind through the bushes, as it swept round the hill on which we were, seemed in unison with our feelings. After some time spent in contemplating the miserable scene before us, during which we gave full vent to the most passionate exclamations of disgust, we determined to spoil this intended feast; this resolntion formed, we rose to execute it. I ran off to our beach, leaving Duke on guard, and, collecting all the white men I could, I informed them of what had happened, and asked them if they would assist in destroying the oven, and burying the remains of the girl: they consented, and each having provided himself with a shovel or a pick-axe, we repaired in a body to the spot. Atoi and his friends had by some means been informed of our intention, and they came out to prevent it. He used various threats to deter us, and seemed highly indignant; bnt as none of his followers appeared willing to come to blows, and seemed ashamed that such a transaction should have been discovered by us, we were permitted by them to do as we choso. We accordingly dug a tolerably deep grave; then we resolutely attacked the oven. On removing the earth and leaves, the shocking spectacle was presented to our view,—the four quarters of the human body half roasted. During our work clouds of steam enveloped us, and the disgust created by our task was almost overpowering. We collected all the parts we could recognize: the heart was placed separately, we supposed, as a savoury morsel for the chief himself. We placed the whole in the grave, which we filled up as well as we could, and then broke and scattered the oven.

the condition of some savage tribes. On the contrary, although full of sensibility and warmth of heart, their chief enjoyment is in activity and enterprise—in the toils, the dangers, and the other coarse but stirring excitements of war. From this active, restless, and ardent constitution of mind, however, spring many of their vices, as well as their virtues—not only their hardihood, and exemption from effeminacy, but their turbulence, their ferocity, their love of blood, and whatever else is in the popular sense of the word most *savage* in their disposition and manners. With less intellectual acuteness and energy, they would be in many respects less revoltingly barbarous. Their cunning, also, would be less refined and insidious; and they would not be so much given to suspicion, jealousy, dissimulation, lying, and calumny. On the other hand, the New Zealanders owe to this quickness, penetration, and flexibility of mind, some of their best and most promising qualities. Instead of the stupid indifference which many other rude nations show, in regard to matters in which they have not been accustomed to take an interest, curiosity is one of the strongest passions of the people. Toils and endurances of every description many of them have undergone, in order to view with their own eyes those wonders of distant lands, of which they had merely heard in the relations of others. No greater zeal, at least, and spirit of enterprise have been displayed by the travellers and voyagers of the most enlightened nations.

In New Zealand, it does not appear that the men are in the habit, as in some barbarous countries, of devolving the common toils of life exclusively upon the women. The latter seem to be far removed, for example, from that state of subjection and wretchedness which is described as their lot among many of the African, and even among some of the American savages. In most of their labours the men take at least some share, although perhaps not quite an equal one. Of one important duty, however, the husband relieves the wife almost completely—namely, of the care of the children. As soon as the infant is weaned, it is taught to twine its arms round its father's neck; and so completely does it in a short time acquire the habit of trusting to this support, that, asleep or awake, it remains the whole day thus suspended, protected from the weather by the same mat which covers its parent; and in his longest journeys as well as his most laborious occupations, it is his constant companion. Almost all the chiefs have more than one wife, most of them six or eight; of these there is one who is accounted the head wife.

The head wives of the chiefs seem in many cases to enjoy considerable consequence, and women are sometimes chiefs themselves; one in particular is mentioned as queen of a large interior district to the south of the Thames: but still they are under many restraints from which their husbands are free. Among others they are not permitted to marry again should their husbands die; and if this regulation is disregarded by them, as it sometimes is, they are exposed to many indignities which render life hardly endurable. They are generally given in marriage, too, without their own consent being even asked, many of them being in fact prisoners of war; and even the head wife, who is generally her husband's equal in rank, is merely delivered over to him by her father. Yet even in these unfavourable circumstances a warm attachment often grows up between the parties; and the death of one is lamented with passionate sorrow. The wife is not enjoined, as among the Hindoos, to devote herself on the funeral pile of her husband by any doctrine of the national religion, nor is it even expected that she should give such a proof of her affection; yet it is by no means unusual for her on occasion of her husband's death to commit suicide, in order that her spirit may follow his. In New Zealand, as in others of the South Sea islands, it is only after a woman, by being married, becomes an article of property, that she is considered as guilty of any impropriety in acting as licentiously as she chooses. Yet it is said to be surprising how few instances of misconduct occur on the part of the females after marriage, notwithstanding this extraordinary training. Both parents are in general fondly attached to their children, and treat them with great kindness and indulgence. The children, indeed, are alleged to be in general spoiled, and rendered unmanageable by the over-indulgence of the parents; and, doubtless, few of them enjoy the benefit of a very wise corrective discipline. They have also, of course, by right of birth, their share of the audacity and wildness of the intrepid, turbulent, and reckless race to which they belong. No wonder, therefore, that we find them characterized as idle, unsteady, wilful, despising at times even the control of their parents, and, of course, still more difficult to be managed by any one else. But, on the other hand, this comparative freedom from restraint in which they are brought up, among its many evil effects, is not without some advantages. Not only is their whole bearing to an extraordinary degree frank and free from embarrassment; but, in many respects, their intelligence at a very early age surpasses that of the generality of European children. Almost as soon as they leave their mother's breast, their fathers take them with them to the public assemblies, and even on their military expeditions. Hence they acquire a familiarity even with what may be called affairs of state, at an age when children with us are considered hardly more than ready to be sent to school. Mr Marsden tells us that he has often seen the sons of chiefs, at the age of four or five years, sitting among the chiefs, and paying the closest attention to what was said. At the age of eight or ten years, he adds, they appear to be initiated in all the national customs and manners. The first lessons taught them are to dance the war-dance, to paddle the canoe, and to use the warlike instruments of their country. The son of a great chief is expected to show his prowess in battle at a very early age, if he means to emulate his father's renown; and Captain Cruise mentions that Shungie's son, Repero, had acquired no little ascendancy in his tribe, by having shot a man before he attained his fourteenth year.

The language of the New Zealanders is radically the same with that spoken in Otaheite, in the Sandwich group, and in many other islands of the South sea. Its principal characteristic is the simplicity of its grammatical forms: it has no distinction of gender; declension and conjugation are effected, as in English, by particles, and superlatives are made by reduplication. A Grammar and Vocabulary of the Language of New Zealand, compiled by professor Lee of Cambridge, was published by the church missionary society, in 1820. The English alphabet is used in this work, but is much less suitable for that purpose than the Indian alphabet of Mr Pickering (of which an account is given in our article *Writing*).

ZEALOTS, among the Jews; those who were zealous for the honour of God and his temple, and not unfrequently went so far that they stoned, or otherwise destroyed, supposed blasphemers, or Sabbath-breakers.

ZEBRA. See *Horse*.

ZECCHIN (in Italian, *zechino*, from *zecca*, the mint where the money is coined); the gold coin of the former republic of Venice. Certain gold coins of other countries, such as the papal dominions, some other Italian states, and Turkey, are also called *zecchins*. The Florentine *zecchins* are called *gigliati*, from the lilies of the grand-ducal arms impressed on them; and the Austrian *zecchins*, or ducats, particularly those of Cremnitz (q. v.), are called, in Italy, *ungheri*. The Venetian *zecchins* were equal to the Hungarian ducats in actual value, but stood from four to five per cent. higher in Venice. The Italian ducat, a silver coin, is to be distinguished from the *zecchin*. Gold ducats are rarely coined in Italy.

ZECHARIAH, OR ZACHARIAH; one of the twelve minor prophets, of whose history little is known. We are ignorant both of the time and the place of his birth. He is called the son of Barachiah, and was commissioned by God to exhort the Jews to undertake the restoration of the temple. Like the other prophets, he also preaches moral reformation. His obscurity has much embarrassed his numerous commentators.

ZEGEDIN, OR SZEGEDIN; a royal free town of Hungary, in Csongrad, near the conflux of the rivers Maros and Theisse; 60 miles north-west of Temesvar, 68 north of Belgrade; lon. 9° 56′ E.; lat. 46° 15′ N.; population, 32,000; houses, 3800. It is surrounded by a mound and moat, has a brick fort, is one of the most considerable towns in Hungary, and contains a college of the monks called Piarists, a Catholic gymnasium, a small philosophical seminary, a monastery of Minorites, and several Catholic and Greek churches. It has some manufactures of woollens, leather and toys. Its commercial intercourse is considerable, its position, at the junction of two navigable rivers giving it the command of an extensive water carriage. The exports consist chiefly of corn, cattle, wool, tobacco and timber.

ZEISBERGER, DAVID, a missionary among the Indians, distinguished by his zeal in religious labours, and by the services which he has rendered to general philology, was born in Moravia, a province of Austria, whence he emigrated, when young, with his parents, to Herrnhut, in Upper Lusatia, for the sake of obtaining religious liberty. In 1738, he went to America, and landed in Georgia, where, at that time, some of the United Brethren had begun a settlement for the purpose of preaching the gospel to the Creek nation. Thence he removed to Pennsylvania, and assisted at the commencement of the settlements of Bethlehem and Nazareth. From 1746 to his death, which took place Nov. 17, 1808 (when he was eighty-seven years and seven months old), a period of sixty-two years, he was, with very few and short intervals, a missionary among the Indians, and made himself master of several of their languages. Those Indians among whom he lived loved him, and often referred decisions, even respecting disputes among different tribes, to him. He received no salary, wanting nothing but food and clothing, and liberty to preach the gospel. He was one of the oldest white settlers in the state of Ohio, and there, and in Upper Canada, dwelt with the Indians, who had given him the name of *Anaussera-cheri* (signifying *On-the-pumpkin*), with whom he endured the greatest hardships. He was chiefly acquainted with two Indian languages, the Onondago (one of the idioms of the Six Nations) and the Delaware, but understood other languages connected with them. In the Onondago he completed, about the year 1768, two grammars, one written in English and the other in German, and a copious dictionary (German and Indian), containing upwards of one thousand seven hundred pages. In the language of the Lenape (or Delaware), he published, in the year 1776, his first edition of a spelling-book, and, in 1806, his second edition, enlarged. Two other books were published by him in this language, the one sermons to children, and the other a hymn-book, containing about three hundred and sixty pages, and upwards of five hundred hymns, translated partly from the English, partly from the German. He left, in manuscript, a grammar of the Delaware language, written in German, which has been translated into English for the American Philosophical Society of Philadelphia, by Mr Duponceau, and which the distinguished and learned translator pronounces to be the most complete grammar that we have ever had of any one of those languages which are called barbarous (see *Indian Languages*), and also a translation into Delaware of the Harmony of the Four Gospels. Mr Zeisberger's works are so important to the students of the particular dialects which he had learned, and afford so valuable materials to the general philologist, that we think it proper to add the titles of them, as they are enumerated in the Catalogue annexed to Mr Duponceau's Report to the American Philosophical Society, in whose library they are deposited: *Deutsch und Onondagoisches Wörterbuch;* a Dictionary of the German and Onondago Languages (7 vols., 4to., MS.); a Grammar of the Lenni Lenape or Delaware Language (translated from the German MS. of the author by P. S. Duponceau, since published in the Transactions of the Philosophical Society at Philadelphia); Essay of an Onondago Grammar, or a short Introduction to learn the Onondago, alias Maqua, Tongue (4to., 67 pp., MS.); *Onondagoisches Grammatik* (4to., 87 pp., MS.); another Onondago Grammar (in the German language, 4to., 176 pp., MS.) See a *Narrative of the Mission of the United Brethren among the Delaware and Mohegan Indians, from its Commencement in* 1740, *to* 1808, by John Heckewelder (Philadelphia, 1820).

ZEIST. See *Zeyst*.

ZEITZ; formerly a Saxon city, but which since 1815, has belonged to Prussia. It is about twenty-three miles distant from Leipsic, on the right bank of the White Elster, on a high mountain, contains 7000 inhabitants, manufactories of cloth, leather, &c. The town is very old, has four churches, and a gymnasium, a house of correction, an institution for the reformation of juvenile offenders, a good library with 12,000 volumes and many manuscripts. The former bishopric of Zeitz was founded by the emperor Otho I., in 968, in order to promote the conversion of the Wends to Christianity. In 1029, the bishops transferred their see to Naumburg.

ZELLE, OR CELLE; a city of Hanover, in Luneburg, 128 miles west of Berlin; lon. 10° 14′ E.; lat. 53° 42′ N.; population, including the suburbs, 9729. It contains five churches, two hospitals, a gymnasium, an orphan-house, a lunatic hospital, a school of surgery, a society of agriculture, &c. It is fortified, and tolerably built, situated on

the Aller, which is here navigable, and, behind the New Town, is joined by the Fuhsee, and has some trade and manufactures. It contains the courts of appeal for the Hanoverian territory at large. It was formerly the capital of a duchy belonging to the house of Brunswick.

ZELTER, Charles Frederic, professor and director of the singing academy in Berlin, a man of much musical talent, was born in 1758, in Berlin. In his seventeenth year, he began to learn the trade of his father, a mason. All his leisure, however, was given to music. Bach's and Hasse's works first made him acquainted with the rules of scientific composition. At last his father forbade him the study of music altogether, because he neglected his trade. In 1783, he became a master mason. Being now independent, he became an active member of the singing academy above mentioned, of which he was made director in 1800. In 1809, he was made professor of music in the Berlin academy of arts and sciences, and founded the first *Liedertafel* (glee club) in Berlin. From this glee club numerous others proceeded in Germany, to which the amateurs of music are indebted for many beautiful tunes and songs. He composed many glees for this club. He also composed other music; but his glees and motetts are his best productions. He did much towards improving vocal music in Berlin, a city perhaps superior to any in respect to the general diffusion of fine singing. His death took place in 1832.

ZEMLIN. See *Semlin.*

ZEMZEM. See *Mecca.*

ZEND-AVESTA (*Living Word*) is the name of the sacred books which the descendants of the ancient Persians, the Guebers in Persia, and the Parsees in India, assert that they received, more than four thousand years ago, from their lawgiver, and the founder of their religion, Zoroaster, or Zerdusht. English and French travellers, at an early period, gave some information respecting the religion of the Guebers and their sacred books. Anquetil du Perron learned, during his residence in India, the sacred language in which those books are written, brought copies of them to Europe in 1762, and published, in 1771, a French translation of the *Zend-Avesta.* English and German scholars soon raised doubts respecting the genuineness and antiquity of these writings, which occasioned disputes. Even the fire-worshippers themselves are said to have admitted that the real *Zend-Avesta* has long been lost. Their present books are said to be legends of the middle ages, and the religion of the present Guebers a mixture of ancient Greek, Christian, and perhaps even Mohammedan notions. Rask, however, in his treatise On the Age and Genuineness of the Zend Language and of the Zend-Avesta (translated into German by Hagen; Berlin, 1826), maintains the genuineness of the *Zend-Avesta*, at least of some parts; but who is the author he does not decide. The *Zend-Avesta* consists of five books, written in the Zend language. A part of it was revealed to Zoroaster by Ormuzd, the highest among good beings. They treat of Ormuzd, and of the antagonist principle of evil, Ahriman; also of the genii of heaven (the angels), the rewards and punishments of a future state, &c., and are read aloud during religious service. Another part consists of a collection of prayers, glorifications of the most important genii, moral sentiments, &c. These are by various authors, and written in various dialects. There are also historical and geographical notices contained in these books, which, however, seem to be capable of various interpretations. Respecting the contents of the Zend writings, see Rhodes's work, *The Sacred Traditions and the complete Religious System of the ancient Bactrians, Medians and Persians, or of the Zend People* (Frankfort on the Maine, 1820). The great work of M. Burnouf, secretary of the Asiatic society in Paris, throws much light on this subject.

ZENITH; an Arabic word, used in astronomy to denote the vertical point of the heavens, or that point of the heavens directly over the head of the observer. Each point on the surface of the earth has therefore its corresponding zenith. The zenith is called the "pole of the horizon," as it is 90° distant from every point of that circle. See *Nadir.*

The *zenith distance* of a heavenly body is the arc intercepted between the body and the zenith, being the same as the co-altitude of the body.

ZENO; a name which often appears in ancient history. Two philosophers of this name are particularly celebrated:—

1. Zeno, the Eleatic, of Elea, or Velia, a Greek colony in Magna Græcia, lived about the eightieth Olympiad (about 450 B. C.), at which time he went with Parmenides to Athens. He was a disciple of the Eleatic school, founded by Xenophanes. To him is ascribed the invention, or at least the developement, of dialectics, of which he made use with much acuteness for the defence of the Eleatic system. Of his writings, nothing has come down to us. According to Aristotle, he taught that there is only one being, which is God; that in nature there is no vacuum, and that motion is impossible. Seneca even asserts that he carried his scepticism so far as to deny the existence of external objects He is represented as a man of noble spirit, full of vigour and patriotism. Failing in his attempt to deliver Elea from the tyrant Nearchus, he calmly endured the torture, and at length bit off his own tongue, in order to prevent himself from betraying his companions. It is said that he was at last pounded in a mortar; and that, in the midst of his torments, he called Nearchus to him, as if he wished to reveal something of importance. The tyrant approached, and Zeno, pretending to whisper, caught his ear with his teeth and bit it off.

2. *Zeno*, the founder of the Stoic sect, was born at Cittium, a maritime town of Cyprus, about 366 B. C. His father was a merchant, who occasionally visited Athens, where he purchased many of the writings of the Socratic philosophers for his son, who early displayed a great propensity for learning. When he became a man, he visited Athens himself, where he became the disciple of the Cynic philosopher Crates; but, wishing to extend the sphere of his knowledge beyond the narrow limits of a sect which prided itself in a contempt for all science, he forsook Crates for Stilpo, and various other masters, finishing his course of study in the school of Polemon, who detected his purpose of selecting materials for the formation of a sect of his own. The design he ultimately carried into execution, in a place called the *painted porch*, from its being adorned with the pictures of Polygnotus, and other eminent painters, and more generally the Stoa, or porch, whence all his followers acquired the name of *Stoics.* Zeno obtained great fame by the acuteness of his reasonings; and, his private character being also highly respectable, he was much beloved and esteemed by his numerous disciples, and even by the great. The Atheni-

ans placed so much confidence in his integrity, that they deposited the keys of their citadel in his hands, and decreed him a golden crown and a statue. He is said to have come rich into Greece, but he lived with great simplicity and abstemiousness; and the modesty of his disposition led him to shun crowds and personal distinction. He reached the advanced age of ninety-eight, when, hurting one of his fingers in a fall, he interpreted the accident into a warning to depart, and, repeating from the tragedy of Niohe, "Here I am; why do you call me?" went home and strangled himself, on the principle that a man was at liberty to part with life whenever he deemed it eligible to do so. The Athenians honoured him with a public funeral and a tomb, with an inscription recording his services to youth, by his rigid inculcation of virtuous principles and good conduct. His death is dated in the first year of the 129th Olympaid (B. C. 263). As the founder of a new school, he seems rather to have invented new terms than new doctrines, and agreed in many points with his masters of the Platonic sect. In morals, he followed the principles of the Cynics, freed of their practical indecencies, which induced Juvenal to observe that the two sects only differed in the tunic. For an account of his philosophy, see *Stoics*.

ZENO, Nicholas and Anthony; two celebrated Venetian navigators of the fourteenth century, to whom the discovery of America, prior to the voyage of Columhus, has been attributed. The story is an follows: Nicholas having set sail in a ship equipped at his own cost, on a voyage to Flanders and England (ahout 1388), was driven by a storm upon an island called by the inhabitants Friseland, which geographers suppose to have been one of the Faroe islands. Here he was kindly received hy a prince of some neighbouring islands, called Porland, who was then meditating the conquest of Friseland. Having aided that prince in conquering this and other northern islands, Nicholas Zeno sent for his brother Anthony, who joined him there in 1391 or 1392. The former died about 1395; hut the latter remained in the country till ahout 1405, when he returned to Venice. During their residence in Friseland, their attention was attracted by the report of a fisherman concerning some land about 1000 miles west of Friseland, inhabited by people living in cities, acquainted with the mechanical arts, and possessing some Latin books, which, however, they did not understand. While in that country, which he said was called *Estotiland*, the same person declared that he went, in a fleet fitted out by the prince of Estotiland, to a country to the south, called *Drogeo*, the inhabitants of which were naked and barbarous, though, far to the south-west, there was another civilized country, where the people had great abundance of gold and silver, and in their temples sacrificed human victims. This account determined the prince to send an expedition thither under Anthony Zeno, which, however, returned, after discovering the island of Icaria, and visiting Greenland, without accomplishing the objects of the voyage. The relation and letters of the brothers Zeno, and the map of the country mentioned in them, remained in the family archives a century and a half, when they were published by Marcolini, under the title of the Discovery of the Isles of Friseland, Esland, Engroveland, Estotiland and Icaria (Venice, 1588). This work is given in the second volume of Ramusio's collection, and in the third volume of Hakluyt, and has excited much discussion among geographical writers, such as Ortelius, Mercator, Forster, Malte-Brun, &c. The latter considers Estotiland to be Newfoundland, Drogeo, Nova Scotia or New England, and the civilized people to the south, the Mexicans, or some ancient nation of Florida or Louisiana. Washington Irving (*Life of Columbus*, appendix, No. xiii.) remarks that, although the brothers Zeno probably visited Greenland, the rest of the story resembles the fables circulated shortly after the discovery of Columhus, to arrogate to other nations and individuals the credit of the achievement.—See, further, Daru's *Histoire de Venise* (vol. i, b. 40).—At all events, it is evident that Columhus had no knowledge of these accounts, as he sailed under the expectation of finding land to the west, and not to the north.

ZENO, Apostolo, an eminent Italian man of letters, was horn at Venice, in 1668. He was the son of a physician in that city, who was a descendant from a noble family long settled in the island of Candia. He was educated in a seminary of religion at Castelli, but principally cultivated polite literature, and the study of Italian history and antiquities. He first acquired celebrity by his melodramas—a species of poetry then much in vogue in Italy. In 1696, he instituted at Venice the academy Degli Animosi, and was the editor of the *Giornale de' Letterati d'Italia*, of which he published thirty-eight volumes between the years 1710 and 1719, and which still maintains its reputation. His first musical drama, *L'Inganni Felice*, was performed at Venice in 1695; and between that time and his quitting Vienna, to which he was invited hy Charles VI., in 1718, who made him both his poet and historian, he produced forty-six operas and seventeen oratorios. He continued eleven years in the imperial service, at the expiration of which he obtained his dismission from the emperor, his personal friend, who allowed him to retain his salary on condition of furnishing annually a drama for music; which he continued to do until the appointment of Metastasio. On his return to Venice, he lived in literary leisure until his death, November 11, 1750, a few months before which he gave his valuable library and collection of coins to the Dominicans. Zeno was of much service to the musical poetry of the Italians, especially the opera, to which he gave a more regular form. (See *Opera*, and *Italian Poetry*.) But his labours as a biographer and historian are of more importance. These include his notes to Fontanini's *Biblioteca della Eloquenza Italiana*, his *Dissertazioni Vossiane*, his additions to Foresti's *Mappamondo Istorico*, and his biographies of Sabellico, Guarini, Davila, and the three Manutiuses. He also aided the labours of others, as Muratori. The dramatic works of Zeno were published at Venice in 1744 (10 vols., 8vo.). They rank not very high as poetical compositions; but he is the first Italian poet who gave his countrymen good rules for tragedy, and freed it from the intermixture of low buffoonery, with which the Italian serious drama was before infected. His letters, which were published in 1752 (3 vols., 8vo.), contain much sound criticism, and many notices of the literary history of his time.

ZENOBIA, Queen of Palmyra, claimed her descent from the Macedonian kings of Egypt. She was instructed in the sciences by the celebrated Longinus, and made such progress that, besides her native tongue, she spoke the Latin, Greek and Syrian languages. She also patronised learned men,

and herself formed an epitome of Egyptian history. She was married to Odenatus, king of Palmyra, and accompanied him both in the war and the chase; and the success of his military expedition against the Persians is, in a great degree, attributed to her prudence and courage. Gallienus, in return for services which tended to preserve the East to the Romans after the capture of Valerian by Sapor, king of Persia, declared Odenatus emperor; on whose death, in 267, she assumed the sovereignty, under the title of queen of the East. She preserved the provinces which had been ruled by Odenatus, and was preparing to make other conquests, when the succession of Aurelian to the purple led to a remarkable change of fortune. That martial prince, disgusted at the usurpation of the richest provinces of the East by a female, determined to make war upon her: and, having gained two battles, besieged her in Palmyra, where she defended herself with great bravery. At length, finding that the city would be obliged to surrender, she quitted it privately; but the emperor, having notice of her escape, caused her to be pursued with such diligence that she was overtaken just as she got into a boat to cross the Euphrates. Aurelian spared her life, but made her serve to grace his triumph. The Roman soldiers demanded her life; and, according to Zosimus, she purchased her safety by sacrificing her ministers, among whom was the distinguished Longinus. She was allowed to pass the remainder of her life as a Roman matron; and her daughters were married, by Aurelian, into families of distinction. Her only surviving son retired into Armenia, where the emperor bestowed on him a small principality.

ZENTNER, GEORGE FREDERIC, baron von, Bavarian minister of justice, was born in 1752, in humble life, at Strassenheim, in the Palatinate, studied at Metz, Göttingen and Wetzlar, and was made professor of law in the university of Heidelberg, where he began to lecture, in 1779, with much success. At a later period, he was attached to the legation of the Bavarian Palatinate, at the congress of Rastadt, and, in 1799, was invited to Munich as privy counsellor. From him originated the two ordinances of 1799 and 1802, for the improvement of education in Bavaria, which have had such success that the Bavarian system makes an epoch in the history of education. In 1819, he was raised to the rank of nobility. In 1820, he was made minister, and, in 1823, minister of justice. The Bavarian constitution is almost entirely his work.

ZEOLITE (*mesotype, natrolite, skolezite*) occurs in delicate crystals, whose primary form is the right rhombic prism of 91° 20′; hardness about that of apatite; specific gravity 2·2; cleavage parallel to the lateral planes of the primary form; colour white, or grayish-white; crystals translucent or transparent. It is also found massive, in radiating masses. Before the blow-pipe, on charcoal, it becomes opaque, and then vitrifies without intumescence. It is composed, according to Vauquelin, of

| | |
|---|---|
| Silex, | 50·34 |
| Alumine, | 29·30 |
| Lime, | 9·46 |
| Water, | 10·00 |

Analysis by Gehlen:—

| | |
|---|---|
| Silex, | 54·46 |
| Alumine, | 19·70 |
| Lime, | 1·61 |
| Soda, | 15·09 |
| Water, | 9·83 |

Zeolite is found in trap and lava. The finest specimens occur in Iceland, Tyrol, and the Faroe islands.

ZEPHYR; a soft, cool, agreeable wind; in Greece, the west, or rather west-south-west wind. The Greek name, according to the etymology, signifies *life-bringing*, because, at the time when this wind begins to blow, the plants are restored to life by the balmy spring air.

Zephyrus, according to the Grecian mythology as well as that of the Romans, was one of the inferior deities—a son of Æolus, or of Astræus and of Aurora, a lover of Chloris or Flora. By the harpy Podargc, he was the sire of the swift horses of Achilles, Xanthos and Balios. His love being rejected by Hyacinthus, he was the cause of his death by blowing Apollo's quoit against his head. Some make him the husband of one of the Hours. Flowers and fruits are under his protection. He is represented as a gentle, beautiful youth, naked, with a wreath on his head, or flowers in the fold of his mantle.

ZERBST, OR ANHALT-ZERBST, formerly a small German principality, which, in 1793, on the extinction of the branch of the house of Anhalt in possession of it, was divided between the three other branches of that house. (See *Anhalt.*) Zerbst, the capital, sixty-five miles south-west of Berlin, now belongs to the duchy of Anhalt-Dessau. It is situated on the small river Neithe, near the Elbe, and has a population of 8000 souls: the palace of the former princes is outside of the walls. Brewing forms a main branch of its industry, and the Zerbst beer is famous. Ornamental manufactures in gold, silver and jewellery are also carried on here.

ZERDUSHT. See *Zoroaster.*

ZETHES, ZETES, OR ZETUS; a son of Boreas, king of Thrace, and Orithyia, who accompanied, with his brother Calais, the Argonauts to Colchis. In Bithynia, the two brothers, who are represented with wings, delivered Phineus from the continual persecution of the harpies, and drove these monsters as far as the island called Strophades, where, at last, they were stopped by Iris, who promised them that Phineus should no longer be tormented by them. They were both killed, as some say, by Hercules, during the Argonautic expedition, and were changed into those winds which generally blow before the dog-star appears, and are called Podromi by the Greeks. Their sister Cleopatra married Phineus, king of Bithynia.

ZETHUS. See *Amphion.*

ZETOUN, OR ZEITOUN, GULF OF (anciently *Malaic gulf*), is a gulf or bay on the eastern coast of Greece, north-west of the island of Negropont, or Eubœa. By the protocol of February, 1830, the northern boundary of Greece, beginning at the mouth of the Aspropotamus, terminated at the gulf of Zetoun. But, on the 21st of July, 1832, the sultan signed a protocol, assenting to the extension of the frontier, as desired by the London conference, namely, from the gulf of Volo to the gulf of Arta.

ZEUS. See *Jupiter.*

ZEUXIS; a celebrated painter, who is said to have begun to practise his art in the fourth year of the ninety-fifth Olympiad (B. C. 397). He was a native of Heraclea, in Magna Græcia, and a pupil of Apollodorus. He is said, by Quintilian, to have been the first who understood the management of light and shade; but, at the same time, he was thought to have given too much of bulk and mas-

siveness to the human figure. He stood extremely high in his profession, excelled all his predecessors, and many stories are told of the fidelity with which he copied nature. One of his most famous pictures was a Helen, which he executed for the Crotonians (according to some, for Agrigentum), as an ornament for their temple of Juno. This figure was celebrated by the poets and amateurs of antiquity, as the finest specimen of art existing; and the artist himself, who was very vain and ostentatious, inscribed under it the lines of Homer, in which Priam speaks his admiration of the beauty of Helen. As models, he had selected five beautiful girls. He became very rich, and, at length, gave his pictures away, affecting to regard them as above all price. One of his finest performances, a Hercules strangling some Serpents in his Cradle, with Alcmena and Amphitryon looking on in terror, was presented to the Agrigentines. Of the circumstances of his private life, little is known; nor is it recorded how long he lived. Tradition, most likely erroneously, attributes his death to a very whimsical cause. It is said, that, having painted an old woman, on attentively surveying his work, he was seized with so violent a fit of laughter that he died on the spot. His contest with Parrhasius is well known. Zeuxis painted some grapes so naturally that birds flew to peck them. Parrhasius painted a curtain so naturally as to deceive Zeuxis himself, who asked to have it drawn aside, and, on learning the deception, acknowledged himself vanquished, as he had only deceived birds, while Parrhasius had deceived an artist. At another time, he painted a boy with grapes, at which the birds again flew. "If," said he, "the boy had been painted as well as the grapes, the birds would not have approached."

Lucian, has preserved a short notice of one of his pictures, which will serve to give some idea of the style and composition which this great master occasionally adopted.

"Among other strange subjects Zeuxis painted a female centaur suckling two young twin centaurs. There is now a copy of this picture at Athens, the exact counter-part of the original, which Sylla, the Roman general, is said to have sent with other pictures to Italy. The vessel in which they were embarked, sunk, I believe, about Cape Malea (St Angelo), when the picture and every thing else on board was lost. However, I saw the copy at Athens, and I will endeavour to describe it. Though I have no pretensions to any skill in judging of paintings, I have a complete recollection of this, as I saw it only a short time ago in the house of a painter at Athens; and perhaps the exceeding admiration which I then felt may help me in my description. The female centaur was represented reclining on some luxuriant grass, with the whole horse part of the figure on the ground, and the hind legs stretched out. The female or fore part was slightly raised, and rested on the bend of the elbow. The fore feet were not stretched out like the hind legs, which would have been inconsistent with the reclining posture; but one fore leg had the knee bent and the hoof turned under, while the other, on the contrary, was in an erect position, fixing itself firmly on the ground, just as a horse does when he is going to spring up. One of the young centaurs the mother held in her arms and suckled, as a female does; the other was sucking like a colt. Above this group, on a kind of eminence, the old centaur, the father, is seen looking down and smiling. He is only about half visible; in his right hand he holds up a lion's cub which he raises above his head, pretending to frighten the young centaurs. What I most admired in this picture of Zeuxis is, the power which he has shown of giving variety to his subject. He has made the man altogether a formidable looking fellow, very wild, his hair tossed in confusion, and all over rough and shaggy: his shoulders are upraised, his look altogether savours of the wild beast, though he is smiling; he is like a tenant of the mountains, untamed. The female, on the contrary, is the model of a most beautiful Thessalian mare, unbroken and unused to the saddle: the upper part, the female, is exceedingly beautiful, except the ears, which are those of a satyr. The union of the two bodies is managed so dexterously that you hardly see where one animal begins to change into the other. One of the young ones seems savage even in its infant state; I was surprised at the look which both of them cast up towards the lion's cub, which they did as naturally as two children, all the time, however, keeping close to their mother's breast."

ZEYD. See *Seyd*.

ZEYST, OR ZEIST; a village of above 1200 inhabitants, with a fine castle, in the province of Utrecht, in the Netherlands, a league from the city of Utrecht, in an agreeable country containing many gardens and walks. It formerly belonged to the counts of Nassau, and was sold, in 1752, to a merchant in Amsterdam, who gave it to the Moravian Brethren for the establishment of a settlement, which at present consists of 300 members. They have built here brother and sister houses, and manufactories, where they make gloves, leather, ribands, gold and silver work, soap, candles, &c., of excellent quality. Not far from Zeyst there is a heath, where the French-Dutch army raised a pyramid of earth a hundred and forty-eight feet high, on the occasion of Napoleon's assuming the crown.

ZIA. See *Zea*.

ZIEGENBALG, BARTHOLOMEW, a celebrated Protestant missionary, was born at Pullnitz, in Upper Lusatia, June 14, 1683. Having gone through the usual course of school education at Gorlitz and Berlin, he removed, in 1703, to the university of Halle, where he applied himself closely to biblical literature. About this time, the king of Denmark being desirous of sending some qualified missionary to India, Ziegenbalg was particularly recommended to him; and, in 1705, he was ordained at Copenhagen for that purpose. He sailed to India the same year, and arrived at Tranquebar, in July, 1706, but met with great opposition on the part of the Danish authorities, who, for a short time, even confined him; nor was he allowed to proceed in a translation of the New Testament into the Malabar language, which he had commenced. Orders, however, arriving from Copenhagen for the Danish authorities to protect the missionaries, and also receiving great pecuniary assistance from England and Germany, he was enabled, in 1711, to make a voyage to Madras, and also to visit the territories of the Mogul. In October, 1714, he sailed for Europe, and reached Copenhagen in the following year. He was received with great respect, and, after completing a dictionary of the Malabar language, which was printed at Halle in 1716, quarto, he visited England, where he obtained an audience of George I., and the members of the royal family; and obtained a passage to India by the direct countenance of the East India company. He accordingly embarked at Deal, in March, 1716, and arrived at

Madras the following August, whence he proceeded to Tranquebar, and resumed his functions. Inspirited by the encouragement which he had met with in Europe, in 1718, he took an extensive journey by land, and was fulfilling the object of his mission with great zeal and success, when he was attacked by the cholera morbus, and died February 23, 1719, in the thirty-sixth year of his age. He was the author of some accounts in German of the particulars of his mission; of *Grammatica Damulica* (Halle, 1716, 4to.); *Brevis Delineatio Missionis Operis* (1717); *Explicatio Doctrinæ Christianæ Damulice* (1719, 8vo.); *Biblia Damulica* (1723). In some of these works he was assisted by his brother missionaries Grundler and Schultz.

ZIETEN. See *Ziethen.*

ZIETHEN, Hans Joachim von, Prussian general of cavalry, knight of the order of the black eagle, &c., one of the most distinguished generals of Frederic the Great in the seven years' war, was born in 1699, at Wustrau, a village in the county of Rappin, in Brandenburg, and began his military career when fourteen years old. After some time, he left the service, but returned to it in 1726, and was appointed lieutenant. A quarrel with his captain occasioned his imprisonment for a year. A duel in which he was engaged, soon after his release, caused his dismission from his corps. In 1730, however, he was again taken into the service. In 1731, he was made captain of cavalry, and, in 1735, made his first campaign against France. In 1736, he was made major, and, in the course of the first Silesian war, lieutenant-colonel. A few days after, he came near taking his former teacher, general Baronay, prisoner, upon which Frederic made him colonel, and gave him a regiment of hussars. In the campaign of 1742, he approached very near Vienna, with a corps of 15,000 men. When the second Silesian war broke out, in 1744, Ziethen was made major-general. He distinguished himself greatly in many engagements, and, on one occasion, marched through the Austrian army, having ordered his soldiers to turn their cloaks inside out, so that the white lining looked like the Austrian uniform. He was wounded, November 23, at Catholic Hennersdorf. His enemies succeeded in making Frederic ill disposed towards him; but he became reconciled to him shortly before the breaking out of the third Silesian war. The reconciliation took place in a manner which is creditable to Frederic. Ziethen was very active in the course of that war, and greatly distinguished himself. At Kollin he was wounded. At Leuthen he broke the path to victory. At Liegnitz he was made general of cavalry on the field of battle. The battle at Torgau was decided by him, though he received undeserved censure from Frederic. Soon after the peace of Hubertsburg, in 1763, he married a second time, when sixty-five years old; and the first son of this union was made a cornet in the cradle by Frederic. Frederic gave him many and repeated marks of his favour. Though seventy-nine years old, he wished to take part in the Bavarian war of succession; but Frederic declined his repeated offers. Ziethen was a man of a noble and frank spirit, and a favourite with the whole nation. He died in 1786, in Berlin. His life was written by L. J. Leopoldina von Blumenhagen (Berlin, 1800).

ZIGETH. See *Szigeth.*

ZIMARRA. See *Masks.*

ZIMMER, Patricius Benedict, a Catholic theologian, born at Abtsgemünd, on February 22, 1752, studied at Ellwangen and Dillingen, received orders in 1775, and was made, in 1783, professor of dogmatics in the university at Dillingen. In 1795, he was dismissed for reasons not assigned, and became pastor at Steinheim: in 1799 he was appointed professor of dogmatics at Ingolstadt, and, in 1800, was transferred to the university of Landshut; in 1806, was dismissed, probably for favouring the philosophy of identity, so called; but, after six months, was appointed professor of archæology and exegesis. In 1819 and 1820, while rector of the university, he was elected deputy of the second chamber of Bavaria, where he was chairman of the committee on the laws. He died in 1820. Among his theological writings are *Diss. de vera et completa Potestate ecclesiastica illiusque Subjecti* (Dillingen, 1784); *Theologiæ Christianæ theoreticæ Systema eo Nexu atque Ordine delineatum, quo omnium optime tradi explanarique posse videtur* (part i, ibid., 1787); *Veritas Christ. Relig., seu Theol. Christ. dogmaticæ* (parts i, and ii, Augsburg, 1789—1790); *Fides Existentis Dei, sive de Origine hujus Fidei, unde ea derivari possit et debeat criticum Examen*, &c. (1791). Among his philosophical works are Philosophical Doctrine of Religion (1 vol.); Doctrine of the Idea of the Absolute (1805); Philosophical Inquiries respecting the general Degeneracy of Mankind (3 vols., 1809). The three last are in German.

ZIMMERMANN, John George, chevalier von, an eminent physician and miscellaneous writer, was born in 1728, at Brug, in the canton of Berne, of which his father was a senator. After receiving a regular education, he made choice of the medical profession, and repaired to the university of Göttingen, where he studied under Haller, a relation of whom he subsequently married, and soon after was appointed public physician to his native town of Brug. In this retired situation, he employed his leisure in the publication of pieces both in prose and verse, and, among others, the first sketch of his popular work On Solitude. This was followed by his essay On National Pride, which passed through several editions, and was translated into various foreign languages. In 1763, he composed his work On the Experience of Medicine, which he followed up by several other professional treatises; in consequence of which he received an offer of the post of physician to the king of England for Hanover, which he accepted, and removed, in 1768, to that capital. His work On Solitude was published in four volumes, octavo. In 1786, he attended Frederic in his last illness, which afforded little room for medical skill, but enabled him to publish an account of his conversations with that celebrated sovereign; e. g. On Frederic the Great, and my Conversation with him shortly before his Death (Leipsic, 1788), and Fragments on Frederic the Great—works which did not increase his reputation. He also undertook a defence of that prince from the censures of Mirabeau, which writings exposed him to severe criticism. His mind was further disquieted by the part which he took in the controversies which arose out of the discussions that led to the French revolution. Attached by court habits and birth to the cause of royalty and aristocracy, he viewed with extreme jealousy every thing which exhibited the slightest tendency to affect them. He even proceeded so far as to address a memoir to the emperor Leopold, recommending the suppression of certain societies, of which he disapproved, by the hand of power, and involved

himself in a prosecution for libel, for a charge which he brought against the baron de Knigge, for an unavowed publication. While his mind was in a state of agitation from these causes, the approach of the French towards Hanover, in 1794, almost subverted his reason. He could think of nothing but the pillage of his house and ruin of his fortune, and, under this morbid irritation, wasted to a skeleton, and died, absolutely worn out, in 1795, at the age of sixty. Most of his works have been translated into English; and his Solitude was, at one time, very popular. His writings towards the end of his life almost destroyed the reputation which he had earned at an earlier period.

ZIMMERMANN, Eberhard Augustus William von, a German writer of note in the departments of geography, ethnography, anthropology and zoology, was born, in 1743, at Uelzen, near Celle, in Hanover. He studied at Göttingen, where he wrote on the analysis of curves, and at Leyden, where he conceived the idea of dividing the animal kingdom with reference to climates, and of directing his attention to the migrations and the ramifications of the races, beginning with man himself—an idea which he kept in view in all his travels and in his writings. He visited England, Italy, France, also Russia and Sweden. To England he went three times, and published in London, in 1788, a Political Survey of the present State of Europe, with sixteen statistical tables. In 1797, he published General Observations on Italy, also a treatise on the Molfetta in Apulia. His Geographical Annals were continued for three years. In 1795 appeared his France and the Free States of North America, and, at a later period, his General View of France, from Francis I. to Louis XVI., and of the Free States of North America (1800, 2 vols.). In 1766, he had been appointed professor of natural philosophy in the Caroline college at Brunswick. The emperor Leopold raised him to the rank of nobility for his writings against the spirit of the revolution. His most important work is his Geographical Pocket-book, which appeared in twelve annual numbers, from 1802 to 1813, and describes, in an agreeable manner, a great part of the earth. A sort of abridgment appeared under the title the Earth and its Inhabitants, according to the latest Discoveries, in five volumes. In 1779, he wrote on the compressibility and elasticity of water. He died in 1815.

ZINC, is a metal of a bluish-white colour, somewhat brighter than lead, of considerable hardness, and so malleable as not to be broken with the hammer, though incapable of much extension in this way. At a temperature between 212° and 300° Fahr., it is both malleable and ductile. Its specific gravity is from 6·9 to 7·2. When broken by bending, its texture is seen to be coarsely granular. On account of its imperfect malleability, it is difficult to reduce it into small parts by filing or hammering; but it may be granulated, like the malleable metals, by pouring it, when fused, into cold water; or, if it be heated nearly to melting, it is then sufficiently brittle to be pulverized. It melts at about 700° Fahrenheit, and soon afterwards becomes red hot, burning with a dazzling white flame of a bluish or yellowish tinge, and is oxidized with such rapidity that it flies up in the form of white flowers, which are called *flowers of zinc*, or *philosophical wool*. These are generated with such rapidity that the access of air is soon intercepted, and the combustion ceases unless the metal be stirred, and a considerable heat kept up. If the metal be heated in close vessels, it rises without being converted into oxide. Chemists are not agreed as to the number of oxides of zinc: but the one above mentioned is the only one of importance. At common temperatures, it is white; but when heated to low redness, it assumes a yellow colour, which gradually disappears on cooling. It is quite fixed in the fire, and insoluble in water. It is a strong salifiable base, forming regular salts with acids, most of which are colourless. It combines also with some of the alkalies. It consists of thirty-four parts zinc and eight parts oxygen. When metallic zinc is exposed for some time to air and water, or is kept under water, it acquires a superficial coating of a gray matter, which is called a *sub-oxide of zinc*. When zinc is burned in chlorine, a solid substance is formed, of a grayish-white colour, semi-transparent. This is the *chloride of zinc*. It may likewise be made by heating together zinc filings and corrosive sublimate. It is soft as wax, fuses at a temperature a little above 212° Fahr., and rises in the gaseous form at a heat much below ignition. Its taste is intensely acrid, and it corrodes the skin. It acts upon water, and dissolves in it, producing much heat. Its solution, decomposed by an alkali, affords the white hydrated oxide of zinc. This chloride has been called the *butter of zinc* and *muriate of zinc*. It consists of nearly equal weights of zinc and chlorine. Bromide and iodide of zinc may be formed by processes similar to those for preparing the analogous compounds of other metals. Sulphuret of zinc may be formed by heating to redness a mixture of oxide of zinc and sulphur. This substance, as found in nature, will be described in the sequel, under the head of the *ores of zinc*. The salts of zinc possess the following general properties: They generally yield colourless solutions with water; ferroprussiate of potash, sulphureted hydrogen and alkalies, occasion white precipitates; infusion of galls produces no precipitate.

*Sulphate of zinc*. Dilute sulphuric acid dissolves zinc, and the salt may be obtained in fine prismatic four-sided crystals. It is commonly called *white vitriol*. It may be formed also by dissolving the white oxide of zinc in sulphuric acid. But it is more extensively manufactured from the native sulphuret in the following manner: The ore is roasted, wetted with water, and exposed to the air. The sulphur attracts oxygen, and is converted into sulphuric acid; and the metal, at the same time being oxidated, combines with the acid. After some time, the sulphate is extracted by solution in water; and by evaporating the solution to dryness, the mass is run into moulds. The taste of this salt is extremely styptic. It reddens vegetable blues, though in composition it is strictly a neutral salt. Dilute nitric acid combines rapidly with zinc, and produces much heat, at the same time that a large quantity of nitrous acid gas is evolved. The solution is very caustic, and affords crystals by evaporation of nitrate of zinc. Muriatic acid acts very strongly upon zinc, and disengages much hydrogen. Phosphoric acid also dissolves this metal. The phosphate does not crystallize, but becomes gelatinous, and may be fused by a strong heat. Fluoric, boracic, carbonic, acetic and oxalic acids, each form compounds with the oxide of zinc. Zinc may be combined with phosphorus by projecting small pieces of phosphorus on melted zinc. The compound is white, with a shade of bluish-gray. Zinc forms a brittle alloy with antimony.

An alloy of zinc and iron has been observed in a zinc manufactory at Bristol. It lined the tube leading from the retort. It was hard and brittle; the fracture showing the broad facets like zinc, but of a duller gray colour, with surfaces more rough and granular. Its specific gravity was 7·172. It consisted of 92·6 zinc and 7·4 iron.

The *ores of zinc* are five in number; viz. *blende, red oxide of zinc, electric calamine, calamine*, and *white vitriol.*

1. Blende occurs crystallized in rhombic dodecahedrons, octahedrons, and in numerous intermediate forms. It cleaves with facility parallel to the faces of the rhombic dodecahedron, which is the primary form of its crystals; lustre adamantine; colour reddish-brown, black, yellow and green; streak white to reddish-brown; hardness equal to that of apatite; specific gravity 4·5 to 4·8. It occurs massive also, as well as in crystals; structure curved, lamellar, columnar, granular and impalpable. Composition, according to the analysis of doctor Thomson:—

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|---|---|
| Zinc, | 68·48 |
| Sulphur, | 23·16 |
| Iron, | 8 08 |

Blende occurs in primitive and secondary rocks, and is found associated with galena and copper pyrites. It abounds in England, Scotland, Saxony, Carinthia, and other European countries. It is the ore which affords the zinc of commerce. Specimens from some localities are phosphorescent, with a yellow light simply on friction. This is the case at Schlackenwald, Bohemia, in the Hartz, and in Perthshire. The splendent fibrous variety from Przibram contains a small proportion of the rare metal cadmium. This metal has likewise been detected in the radiated blende of Freyberg and Derbyshire.

2. *Red oxide of zinc.* This interesting ore possesses only a lamellar structure, never having been met with in perfect crystals. It yields to cleavage parallel to all the faces of a regular six-sided prism. Its colour is ruby or blood-red. It is translucent, with a shining lustre. By long exposure to the weather, it suffers decomposition at the surface. It is easily scratched by the knife; specific gravity 6·2. It consists of oxide of zinc 88 and red oxide of manganese 12. It is infusible before the blow-pipe, excepting when mixed with sub-carbonate of soda, in which case, it melts into a transparent yellow bead. Its only localities are Franklin and Stirling, New Jersey, where it occurs along with ores of iron and manganese.

3. *Electric calamine.* This ore occurs crystallized, stalactitic, mamillary, and compact. The crystalline forms are numerous; the primary form is that of a right rhombic prism of 102° 30′ and 77° 30′. The crystals are not often solitary, but mostly disposed in radiating groups. It varies from transparent to translucent or opaque. Its hardness is above that of apatite; specific gravity 3·4. Its colours are grayish, bluish and yellowish-white, or possessed of some tinge of green; and occasionally it presents a brownish or blackish colour. It consists of

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|---|---|
| Oxide of zinc, | 68·3 |
| Silex, | 25· |
| Water, | 4·4 |

When gently heated, it is strongly electric; some varieties become so by friction. Before the blow-pipe, it is infusible, but loses twelve per cent. by ignition. Its native localities are in primitive and secondary rocks. It is found at Retzbania in Hungary, at Bleiberg in Carinthia, and at Freyberg in the Brisgau. In Scotland, it is found in the lead mines of Wantockhead. It also occurs in Wales and England.

4. *Calamine.* This valuable ore is found crystallized, pseudimorphous and massive. The crystals are obtuse or acute rhomboids, or long quadrilateral tables: cleavage is parallel to all the planes of an obtuse rhomboid of 106° 30′; lustre between vitreous and resinous. It is more or less transparent, commonly of a grayish or yellowish-white colour, with some shade of green or brown; hardness equal to apatite; specific gravity 4·1 to 4·4. It is composed of oxide of zinc 65·2 and carbonic acid 34·8. Before the blow-pipe, it is infusible, but loses about thirty-four per cent. by ignition. It dissolves with effervescence in muriatic acid. It is very abundant in England, in Siberia, and in several countries of Europe. It is an ore which is highly prized, on account of the facility with which brass may be manufactured from it.

5. *White vitriol* occurs massive, stalactitic, botryoidal, reniform, and investing. The structure of the massive is fibrous and radiated. It is shining, soft, brittle and translucent; specific gravity 2. It has a nauseous and metallic taste. It consists of

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|---|---|
| Oxide of zinc, | 27·5 |
| Sulphuric acid, | 22·0 |
| Oxide of manganese, | 0 5 |
| Water, | 50·0 |

Before the blow-pipe, it is fusible with ebullition, giving off large quantities of sulphureous acid, and leaving a gray scoria. It dissolves in boiling water. It occurs principally with blende, from whose decomposition it is supposed to arise. Its localities are England, the Hartz, Austria, and Sweden.

The ores of zinc are met with in Germany, Belgium, France, and Sweden; and in Great Britain, in Cornwall, especially in Huel Hope mine, in the parish of Gwennap; in a conglomerate or puddingstone-rock of the Mendip Hills in Somersetshire; abundantly in the limestone of Derbyshire, where the lead-mines are situated; and associated with the lead-ore at Holywell in Flintshire; at Aldstone Moor in Cumberland; and at Wanlock Head and Lead-Hills on the borders of the counties of Dumfries and Lanark. But all the zinc that is now produced in the United Kingdom is trifling in quantity, and quite insufficient for the demand, so that a large amount is imported annually, chiefly from Germany and Belgium. In the year 1833 the importation was 65,115 cwts., of which rather more than a half was retained for home consumption, the chief export being to the East Indies.

To obtain the metal, the ore, whether it be calamine or blende, after being raised from the mine, is carefully picked, to separate any impurities, and roasted in a furnace in a moderately red heat, by which the carbonic acid is driven off from the calamine and the sulphur from the blende. An oxide of zinc remains, and this is intimately mixed with powdered coal by their being ground together in a mill. The mixture is now put into large earthen crucibles, about four feet high, having an iron tube in the interior, one end of which rises near to the top, the other passing through the bottom of the jar and the floor of the furnace into a cistern of water underneath. Covers are firmly luted to the crucibles; they are surrounded with fuel in the furnace, and an intense heat is kept up for several hours. The carbon of the coal combines with the oxygen of the

ore; and the metallic zinc, thus set free, rises in a melted state to the top of the crucible, descends through the iron tube, and is condensed in the water in the form of drops. These drops, being collected, are again melted, and poured into moulds to form the bars or ingots in which the metal is brought to market. Eight tons of calamine and twenty-two tons of coal yield about two tons of zinc.

*Uses of Zinc.*—The chief consumption of this metal is in making brass, which is a compound of copper and zinc. The ores, after undergoing the process of roasting near the mines in England, are chiefly smelted in the neighbourhood of Birmingham, Sheffield, and Bristol, where there are large manufactories of brass. The proportions of the two metals are very different in the brass made in different places. The common brass of Paris contains about 13 per cent. of zinc, that of England rather more; and a remarkably fine brass made at Geneva for the nicer parts of watchmaking, contains as much as 25 per cent. The brass of England is far inferior to that made in many parts of the continent, and that used for philosophical instruments is chiefly obtained from Holland. Zinc, rolled out into sheets, has been used for covering houses instead of lead, and it has of late been manufactured into vessels for culinary and other domestic purposes. It is very unsuitable, however, for kitchen-utensils, because it combines very readily with acids, and such combinations act as violent emetics. Zinc is used in China for coins. United with oxygen it forms a white powder, which is used in oil-painting.

ZINGARELLI, Nicolo, a celebrated composer, the last scion of the genuine Neapolitan school, chapel-master at St Peter's in Rome, was born at Naples, in 1752. In the seventh year of his age, he lost his father, and was placed at the conservatory in Loretto, for the purpose of studying music under Fenaroli. Cimarosa and Giordanello were his school-fellows here. To obtain a more complete knowledge of the theory of the art, he also studied under the abbate Speranza, and, on leaving the conservatory, received the place of master of the chapel at Torre dell' Annunziata. In 1781, he composed for the theatre San Carlos, in Naples, his opera *Montezuma*, and, in 1785, brought forward his *Alzinda*, in the theatre Della Scala in Milan, with great success. In this work, he adopted a more simple and easy style. His best operas are *Pirro; Artaserse; Romeo e Giulietta*. In 1789, he brought out his *Antigone*, from Marmontel, in Paris; but the public events, then occurring, absorbed the attention of the public, and he soon returned to Italy, where, in 1806, he became director of the Vatican chapel. In 1812, he was appointed chapel-master in St Peter's, and soon after, director of the new conservatory in Naples. Zingarelli composed much church music; and his works are highly esteemed for their expression.

ZINGIS, GENGIS, or JENGHIS KHAN. See *Gengis Khan*.

ZINZENDORF, Nicholas Louis, count von, the restorer of the Moravians, or founder of the society of United Brethren (see *Bohemian Brethren*, and *United Brethren*), was born May 26, 1700, at Dresden, in Saxony, where his father was one of the elector's ministers of state, and much esteemed. He died early, and the son was educated by his grandmother, Mad. von Gersdorf, a pious and learned lady, who published a collection of hymns and poetical contemplations, and corresponded in Latin with the learned Schurtzfleisch. At that time, the opinions of the Pietists, in Germany, attracted much attention. The pious Spener often visited Mad. von Gersdorf. His visits, and the pious meetings, held daily in the house, contributed to awaken early religious feelings in young Zinzendorf, which soon ran into extravagance. While a child, he used to write little letters to the Saviour, and throw them out of the window, hoping that the Lord might find them. When ten years old, he was sent to the academy of Halle, then under the direction of its founder, the devout Franke. Here he established pious meetings, and founded a mystic order of the mustard-seed. His uncle and guardian did not view his turn of mind favourably, as he wished to prepare him for practical life, and sent him, in 1716, to the university of Wittenberg, the theological teachers of which were known under the name of the *Orthodox*, and were the most violent opponents of the Pietists of Halle. The feelings of Zinzendorf, however, remained unchanged, and, in 1717, when the centennial celebration of the reformation took place at Wittenberg, he shut himself up in his chamber, and mourned over the degeneracy of the church, with fasting and weeping. Besides his other studies, he applied himself, without assistance or guidance, to theology, and, at this early period, resolved to devote himself to the ecclesiastical profession. He left Wittenberg in 1719, and travelled through Holland and France. These travels he described in a work bearing the title Pilgrimage of Atticus through the World. During this period, he spent his time chiefly in conversing with distinguished clergymen on religious subjects. In 1721, he received an appointment in the government at Dresden, but, in 1727, resigned it, having, during his term of office, taken little share in business, and chiefly occupied himself with the study of theology and pious exercises. In 1722, he married a countess of Reuss von Ebersdorf, and gave some emigrant Moravian Brethren permission to settle on his estate of Berthelsdorf, Upper Lusatia. This settlement received, in 1724, the name of *Herrnhut*, which signifies "protection of the Lord." The settlers were at first few, but soon increased in number; and the count, in conjunction with a Lutheran minister, named Rothe, the clergyman of Berthelsdorf, and some others, laboured to instruct them, and to educate their children. At length, he conceived the idea of founding a religious community,—not a sect, as the United Brethren do not consider themselves a sect,—and, for this purpose, made known his opinions in various writings, sometimes contradictory to each other, which excited much opposition. But the obstacles in the way of his plan could not induce him to give it up. In 1734, he went, under an assumed name, to Stralsund, passed an examination as a theological candidate, and preached for the first time in the city church. He now travelled into different countries, in order to extend his society, from which already missionaries proceeded; but, as may be imagined, he did not every where meet with a favourable reception. In 1736, he was banished from his country. The causes assigned were the innovations, conventicles and dangerous principles that he had introduced, by which the authority of the government, and the established forms of religious worship, were brought into disrepute. But, in 1747, this order was repealed. Zinzendorf, in the mean time, had been consecrated bishop of the Moravian church in Berlin. As he could not

preach publicly in that city, he held for a time private meetings in his house, which were very much frequented. In 1739, he wrote a kind of catechism,—the Good Word of the Lord,—and made a voyage to St Thomas and St Croix, in the West Indies, where the Brethren had already established missions. (q. v.) His object was to put these on a firmer footing. With the same view, he went, in 1741, to North America, whither a daughter, sixteen years old, accompanied him. He assisted here in establishing missions among some of the Indian tribes. On all these expeditions, he was incessantly occupied, not only with preaching, corresponding, and attending to the general concerns of the society, but in writing books. He wrote, during this time, more than a hundred books, some for the edification and instruction of his society, others in answer to attacks on himself and his followers, and others giving accounts of the origin and organization of the society, and of his own labours. Many excellent and elevated passages are to be found in them, which J. G. Müller, in his sketch of Zinzendorf (in the Confessions of Remarkable Men, 3d vol., p. 166 et seq., 222 et seq.), has collected; but many parts of them are such as most readers would consider extravagant, and many expressions appear indecorous and objectionable. These are to be attributed to the warmth of his imagination, and his habits of rapid composition, connected, perhaps, with a desire of appearing original, and a want of taste. His hymns, in particular, which stand unaltered in the old hymn-book of the Herrnhuters, are full of quaint, ambiguous and indecent expressions and images, and are often far from bearing the stamp of poetic inspiration, especially those hymns in which he represents the mysterious union of Jesus, the Bridegroom, with his bride, the church; and not less objectionable was his doctrine of the office of mother (*Mutteramte*), which he ascribed to the Holy Ghost. Sometimes a whole hymn consists of but one image variously presented. These absurdities had even extended to the religious service. Zinzendorf himself, in the latter part of his life, would gladly have blotted out many of these passages from his writings, and strove to give a better direction to his community, in which he was not without success. Certainly part of the praise which must be given to the Moravians for their activity, their industry, their peaceable manners,* and good behaviour, wherever they have settled, is due to their founder. When he returned, in 1743, to Europe, he made a journey to Livonia, where he had adherents; but the Russian government prohibited him from proceeding farther; and he was sent back to the frontier under a military escort. He then made several visits to Holland and England, where he spent above four years, and, countenanced by archbishop Porter, general Oglethorp, and others, obtained an act of parliament for the protection of his followers throughout the British dominions. Though the number of his opponents constantly increased, he had the satisfaction of seeing new societies of his followers arising, which sent missions to other parts of the world; e. g. the East Indies, Tranquebar, &c. He also succeeded in establishing a Moravian academy, and in obtaining a commission of investigation into their principles, which commission declared the Moravian community true adherents of the Confession of Augsburg. (See the article *United Brethren*.) His second wife was Anna Nitschmann, who, in 1725, had come with her parents from Moravia, and had been, for many years, superintendent of the "single sisters" at Herrnhut. Zinzendorf died May 9, 1760, at Herrnhut. See David Cranz's *Alte und neue Brüderhistorie*, and Spangenberg's *Leben des Grafen N. L. von Zinzendorf* (Barby, 1772—1775, 8 vols.), of which Reichel and Duvernois have published abridgements. Herder, in his *Adrastea* (4th vol., number i.), has made some excellent observations on Zinzendorf and his works.

ZION. See *Sion*.

ZIRCON. This rare mineral, which is sometimes a gem, occurs in crystals, whose forms are octahedrons and right square prisms surmounted by four-sided pyramids. The primary form is an obtuse octahedron, whose planes over the summit incline under the angle of 84° 20′. Cleavage takes place parallel to the faces of the primary figure, but with great difficulty; lustre adamantine; colour red, brown, yellow, gray, and white; streak white; specific gravity 4·5 to 4·7; hardness rather superior to quartz. It varies from transparent to opaque. Before the blow-pipe, alone, it is infusible, but with borax, melts into a transparent glass. It consists of

| | |
|---|---|
| Zirconia, | 64 00 |
| Silex, | 34·00 |
| Oxide of iron, | 0·25 |
| Oxide of titanium, | 1 00 |

Zircon occurs imbedded in sienite and granite. It is also found imbedded in several simple minerals, and occurs in the sands of rivers. Its localities are Frederic-Schwerin in Norway, Kitiksul in Greenland, at which places it is found in sienite. It occurs at several places in the mountains of gneiss, in New York and New Jersey; also in magnetic iron ore, at Monroe in New York. Very distinct detached crystals are brought from Buncombe county, in North Carolina. Loose crystals of fine colours are found in the sands of rivers in Ceylon, with spinelle ruby, sapphire, and iron sand; likewise in the district of Ellore, in India, and in the brook Expailly, in France. All the varieties of zircon which possess transparency, are cut and polished by the lapidary, but, in general, are not greatly esteemed. The exposure of some colours to heat deprives them of their hues, in which condition they are said to have been sold for diamonds.

ZIRCONIA. This earth was discovered by Klaproth, in 1789, in the zircon. To obtain it, powder the zircon very fine, mix it with two parts of pure potash, and heat them red hot in a silver crucible for one hour. Treat the substance obtained with distilled water, pour it on a filter, and wash the insoluble part well. It will be a compound of zirconia, silex, potash, and oxide of iron. Dissolve it in muriatic acid, and evaporate to dryness, to separate the silex. Redissolve the muriates of zirconia and iron in water; and, to separate the zirconia which adheres to the silex, wash it with weak muriatic acid, and add this to the solution. Filter the fluid, and precipitate the zirconia and iron by pure ammonia; wash the precipitates well, and then treat the hydrates with oxalic acid, boiling them well together, that the acid may act on the iron, retaining it in solution, whilst an i-

* A remarkable proof of the peaceable and sober character of the Moravians, is to be found in the fact that, during a revolt, some years ago, of the slaves in the island of Jamaica, in which the feelings of the whites were excited to the highest degree against the missionaries, so that they were in general ordered to leave the island, and a few were executed, the Moravians alone were allowed to remain undisturbed.

soluble oxalate of ammonia is formed. It is then to be filtered, and the oxalate washed, until no iron can be detected in the water that passes. The earthy oxalate is, when dry, of an opaline colour. After being well washed, it is to be decomposed by heat in a platina crucible. Thus obtained, the zirconia is perfectly pure, but is not affected by acids. It must be reacted on by potash as before, and then washed until the alkali is removed. Afterwards dissolve it in muriatic acid, and precipitate by ammonia. The hydrate thrown down, when well washed, is easily soluble in acids. It is insoluble in water and the pure alkalies, but the alkaline carbonates dissolve it. Heated with the blowpipe, it does not melt, but emits a yellowish phosphoric light. Heated in a crucible of charcoal, bedded in charcoal powder, placed in a stone crucible, and exposed to a good forge for some hours, it undergoes a hasty fusion, which unites its particles into a gray opaque mass, resembling porcelain. In this state, it is sufficiently hard to strike fire with steel, and scratch glass. Specific gravity 4·3. Potassium, when brought into contact with zirconia ignited to whiteness, is converted into potash, and dark particles of zirconium, the metallic base of the earth, make their appearance. They are as black as charcoal, and, at a temperature slightly elevated, burn with great intensity. It combines with sulphur, and forms a sulphuret of zirconium.

ZIRKNITZ, or CZIRKNITZ; a remarkable lake of the Austrian states, in Carniola, twenty-three miles south-west of Laybach. It is situated amidst lofty mountains and frightful precipices, containing vast subterranean caverns, which communicate with each other by openings, in general small. The lake is six miles in length, and three in breadth, and presents a curious phenomenon. The bottom remains dry for about four months, is cultivated, and made to produce a crop of millet and hay. At the end of that time, the water rises with great impetuosity, and fills the lake in the short space of twenty-four hours. This singular phenomenon is owing to its having two subterranean outlets, by which the water is discharged, and through which it again rises.

ZISCA, or ZIZKA (pronounced *Shishka*). John Zisca, of Trocnow, the formidable general of the Hussites, was descended from a noble Bohemian family, and was born about 1360, on a farm belonging to his parents, at Trocnow, in the present circle of Budweis, in the open air, under an oak. He lost his right eye in his boyhood, but did not, as some have supposed, derive the name of Zisca from that circumstance. This was the name of his family, and does not signify *one-eyed*. He went as a page to the court of Wenceslaus VI., king of Bohemia, where he subsequently became a chamberlain. He displayed great talents from early youth, but, at the same time, a gloomy and solitary disposition. His first military service was in the band of volunteers who went from Bohemia and Hungary to assist the Teutonic knights against the Poles. He took part in the battle of Tanneburg, on July 15, 1410, in which the knights suffered a great defeat. Zisca then fought in the Hungarian service against the Turks, and afterwards with the English against the French, at the battle of Agincourt (1415). After his return, he remained at the court of king Wenceslaus, and shared in the indignation of a great part of the Bohemian nation, at the fate of the two reformers, Huss (q. v.), and Jerome of Prague. A monk having dishonoured his sister, who was a nun, and abandoned her, Zisca became bent on vengeance. Wenceslaus himself one day told him, that, if he knew any means of taking revenge for the disgrace inflicted on the Bohemians at Constance, he had his consent to use them. Zisca now left the court, tried the disposition of the people, and soon returned to Prague. Nicholas of Hussynecz had already placed himself at the head of the insurgents, and Wenceslaus called on the citizens of Prague to give up their arms: but Zisca led them armed into the castle (April 15, 1418), and he said to the king, "With these weapons will we fight for thee;" and the citizens retained their arms. Zisca was considered, from this time, the head of the Hussites. On the occasion of a procession (July 30, 1419), the priest of the Hussites was hit by a stone. They immediately stormed the town-house, at the instigation of Zisca, and threw thirteen of the city council out of the window on the pikes of the people. King Wenceslaus died of fear in consequence of this affair. His brother and successor, the emperor Sigismond, delayed undertaking the government of Bohemia, and Zisca gained time to make his preparations: yet he was at first obliged to retreat from Prague to Pilsen. Sigismond now began to execute the adherents of the new doctrine, and the Hussites, under Zisca, swore never to acknowledge him as king of Bohemia. They erected fortresses, and Zisca caused a town to be built on mount Tabor, from which the Hussites are sometimes called *Taborites*. He fortified the new city in a way which reflected honour on his skill. He is also said to have invented the bulwark of wagons, by which he protected his infantry against the enemy, as he was destitute of cavalry. In a short time, he disciplined his ill-armed and licentious horde. A few successful engagements procured him better arms, and horses for mounting a part of his men. His enterprises were undertaken from vengeance, religious hatred, and love of plunder. He committed many cruelties, partly in order to make himself feared, partly because he was obliged to yield to the wild passions of his fanatical followers. In order to defend Prague against Sigismond, who was approaching with a large army, he repaired thither, and intrenched himself on the hill of Wittkow. Here, July 14, 1420, he repelled repeatedly the assaults of 30,000 men with 4000; and the place is still called *Zisca's hill*. From want of money, the emperor effected little during this campaign. In 1421, Zisca took the castle of Prague, and there got possession of the first four cannons, which, since the invention of gunpowder, had found their way to Bohemia. From this time, cannons and guns (though the latter could be procured at first only by noblemen) became common among the Hussites and their enemies. Zisca continued his system of plundering in Bohemia, took several fortresses, generally by assault, and treated the conquered cruelly. After the death of Nicholas of Hussynectz, in 1421, all the Hussites acknowledged him as their leader and chief; but he caused the crown of Bohemia to be offered to the king of Poland. By incredibly quick marches he everywhere anticipated the enemy. During the siege of the castle of Raby, an arrow deprived him of his only remaining eye. He now had himself carried about with his army on a car, so that he could be seen by his men, whom he arranged for battle by means of the descriptions which were given to him of the country. He had a legion called the *invincible brethren*, with which he generally decided the

fate of actions. He defeated a considerable army which the emperor Sigismond sent against him, at Deutschbrod (Jan. 18, 1422), and even penetrated, in 1422, into Moravia and Austria. The citizens of Prague refusing to obey his orders, he humbled them by several defeats. Only once, at Kremsir, in Moravia, he was obliged to retreat. This was the only time that he was ever beaten in the open field. Sigismond offered him, at last, the government of Bohemia, with great privileges, if he would declare for him. But during the negociations, while he was occupied with the siege of Przibislaw, in the circle of Czaslau, a pestilential disorder carried him off (Oct. 12, 1424). The Taborites, infuriated at his death, stormed the town, and killed every living being, and burnt every dwelling. Zisca had won thirteen pitched battles, and been victorious in more than a hundred fights, notwithstanding his blindness and age. He considered himself an instrument of God's wrath, and called the cries of the monks and priests whom he sent to the stake, his sister's bridal song. He was buried in the church of Czaslau; and his favourite weapon (an iron battle-axe) was hung up over his tomb. It is related that the emperor Ferdinand I., more than a hundred and thirty years after, when on a journey to Prague, happening to visit the church of Czaslau, and being told that Zisca was buried there, immediately left the church, and even the town. The tomb was overturned in 1627, by order of the emperor, and Zisca's bones removed. The story of his having ordered his skin to be used as a drum, is a fable. See Max. Millauer's *Diplomatic Historical Essay on John Zisca of Trocnow* (Prague, 1824, in German); see also the article *Huss and Hussites*.

ZITTAU; a town eighteen leagues from Dresden, in the Saxon province of Upper Lusatia, on the river Mandau, which empties into the Neisse, in the vicinity; population, 8100; lat. 50° 49′ north. Zittau is the centre of an active transit trade, owing to its situation near the Bohemian frontier, and in the midst of some industrious manufacturing villages. Here are a gymnasium, five churches, a theatre, &c.

ZISANIA. See *Wild Rice*.

ZNAYM; a town in Moravia, capital of a circle of the same name, near the river Teya, thirty-eight miles north-west of Vienna, and sixty-eight south-west of Olmütz; lon. 16° 2′ east; lat. 48° 31′ north; population, 6000. It contains a citadel, a Catholic gymnasium, a Carthusian monastery, and some good houses, but is generally ill-built. Population of the circle, 135,567; houses, 24,298; families, 33,578; square miles, 1260. It is generally hilly, but tolerably fertile. In the neighbourhood of this town, the armistice between the French and Austrians was concluded, July 12, 1809, which was followed by the peace of Vienna.

ZOBEIDE, OR ZEBD-EL-KHEWATIN (the *flower of women*), was the cousin and wife of the celebrated caliph Haroun al Rashid. History records her piety and generosity, and the Persian writers speak of her as the founder of Tauris, one of the chief cities of Persia; but she performs a more important part in the Arabian Nights, in which she is a more conspicuous character than in history. She died in 831, after having survived her illustrious husband twenty years.

ZOBTENBERG; a mountain in Silesia, about eighteen miles from Breslau, near the small town of Zobten, 2318 feet above the level of the sea, with a fine extensive view from the top. According to Büsching, the ancient Asciburg, or Asen castle (Asgard), stood here, corresponding to the *mons Asciburgius* of Ptolemy. The mountain is of a primary character. A block of from 7000 to 8000 cwt. was taken from this mountain, which, according to the wish of marshal Blücher, is to cover his tomb in the shape of a cube.

ZODIAC (from the Greek ζωδια, animals, because the constellations composing it are represented under the figures of animals), in astronomy; an imaginary ring or broad circle in the heavens, in the form of a belt or girdle, within which the planets all make their revolutions. In the middle of it runs the ecliptic, or path of the sun in his annual course; and its breadth, comprehending the deviations or latitudes of the earlier known planets, is, by some authors, accounted sixteen, some eighteen, and others twenty degrees. The zodiac, cutting the equator obliquely, makes with it the same angle as the ecliptic, which is its middle line; which angle, continually varying, is now nearly equal to 23° 28′, which is called the obliquity of the ecliptic, and constantly varies between certain limits which it can never exceed. (See *Ecliptic*.) The zodiac is divided into twelve equal parts, of thirty degrees each, called the *signs of the zodiac*, being so named from the constellations which anciently occupied them. But the stars having a motion from west to east, those constellations do not now correspond to their proper signs; from whence arises what is called the *precession of the equinoxes*. And, therefore, when a star is said to be in such a sign of the zodiac, it is not to be understood of that constellation, but only of that dodecatemory, or twelfth part of it. See *Constellations*, *Precession of the Equinox*, and *Denderah*.

ZODIACAL LIGHT; a triangular beam of light, rounded a little at the vertex, which is seen at certain seasons of the year, before the rising and after the setting of the sun. It resembles the faint light of the Milky Way, and has its base always turned towards the sun, and its axis inclined to the horizon. The length of this pyramidal light, reckoning from the sun as its base, is sometimes 45°, and at others, 150°; and the vertical angle is sometimes 26°, and sometimes 10°. It is generally supposed to arise from an atmosphere surrounding the sun, and appears to have been first observed by Descartes, and by Childrey in 1659; but it did not attract general attention till it was noticed by Dominique Cassini, who gave it its present name. If we suppose the sun to have an atmosphere, as there is every reason to believe from the luminous aurora which appears to surround his disc in total eclipses (see *Sun*,) it must be very much flattened at its poles, and swelled out at the equator, by the centrifugal force of his equatorial parts. (See *Atmosphere*.) When the sun, then, is below the horizon, a portion of this luminous atmosphere will appear like a pyramid of light above the horizon. The obliquity of the zodiacal light will evidently vary with the obliquity of the sun's equator to the horizon; and in the months of February and March, about the time of the vernal equinox, it will form a very great angle with the horizon, and ought, therefore, to be seen most distinctly at that season of the year. But when the sun is in the summer solstice, he is in the part of the ecliptic which is parallel to the equator, and, therefore, his equator, and consequently the zodiacal light, is more oblique to the horizon. Laplace, however, has made some objections to this theory

in his *Mécanique Celeste*; and Regnier is of opinion that it is owing merely to the refraction of the solar light by the earth's atmosphere.

ZOËGA, George, a Dane, one of the greatest antiquarians of our time, was born December 20, 1755, at Dahler, a village in Jutland, where his father was a clergyman. In 1772, he entered the gymnasium of Altona, and, in 1773, the university of Göttingen. In 1776, he travelled through Switzerland and Italy, and lived during the winter in Leipsic. In 1777, he returned to his parents, and remained until 1778 in Copenhagen. He now became a tutor, and went, in 1779, with his pupil, to Göttingen, and again to Italy. In 1782, he made a third journey to Italy. On his return, having heard in Paris of the change of ministry in Copenhagen, he resolved to go back to Rome, and reside there the rest of his life. In 1787, he became a Catholic, in order to be able to marry the daughter of the painter Pietruccioli. Zoëga undoubtedly received his first impulse to a profound investigation of antiquity from Winckelmann. He lived entirely with the ancients; and no modern characters or events exerted such an influence over him. In early youth, he had an inclination to melancholy, and his temper was irritable; but he overcame these propensities, and the serene tranquillity of the Greek character took possession of his soul. He was kind, and had a noble heart. He observed strictly the external forms of religion. When he arrived in Rome, professor Adler presented him to cardinal Stefano Borgia, whose favour and patronage he soon obtained. This cardinal had a great fondness for Egyptian antiquities, of which he possessed a rich collection. Zoëga, who was acquainted with the Coptic language, soon began to explain these ancient monuments. In 1787, he published an account of a complete collection of Egyptian coins, with full illustrations. The general approbation bestowed on this work, which furnished important contributions to history and chronology, excited the attention of Pope Pius VI., and he employed Zoëga in the explanation of the obelisks. In 1797, he published, at the expense of the pope, his great work on the obelisks—*De Origine et Usu Obeliscorum* (Rome, 1797)—which procured him great reputation. The *Museo Borgiano Veliterno* was rich in Coptic manuscripts. Zoëga undertook the difficult task of explaining them, and, in 1810, the fruits of this immense labour were given to the public. Zoëga wrote, in the German language, an Archæological Guide through Rome; and himself accompanied the most distinguished travellers through the city. A treasure of rare knowledge is contained in his *Li Bassirilieve antichi di Roma, incisi da Tom. Piroli colle Illustrazioni di Giorgio Zoega*, in two folio volumes (Rome, 1808). He often regretted, at a later period, that he had not devoted to Grecian antiquities the time which he had given to the Egyptian. The Danish government appointed him its consul-general for the States of the Church; and, a few days after his death, a diploma of the Danebrog order, intended for him, arrived in Rome. He was professor of the university of Kiel, and member of the academies of Copenhagen, Göttingen, Berlin, Siena, Florence, Rome, &c. He died February 10, 1809. He had eleven children; but three only survived him, who are supported by the Danish government. Mr Niebuhr, the historian, offered a prize, some years before his death, for the best essay on Zoëga and his productions.

ZOILUS; the name of a Thracian rhetorician, whose hypercriticisms on the works of Homer have given him a very unenviable kind of distinction with posterity. He was a native of the town of Amphipolis, said to have been born about 270 years before the Christian era, and studied under Polycrates, himself an abusive and illiberal critic. The appellation by which Zoilus delighted to be known, was Homero-mastyx, although his censures were by no means confined to the writings of the great father of epic poetry, but extended indiscriminately and impartially to those of Demosthenes, Aristotle, Plato and all others whose works came under his lash. His very name has now become a proverb, as applied to all illiberal and captious pretenders to criticism. The period of his death, which was a violent one, is unknown: indeed, the precise era in which he lived is not absolutely determined, Vitruvius making him contemporary with Ptolemy Philadelphus, while Ælian refers him to the ninety-fifth Olympiad.

ZOISITE. See *Epidote*.

ZOLLIKOFER, George Joachim, one of the most eminent preachers of the last century, was born at St Gall, in Switzerland, August 5, 1730. He studied at the gymnasia of Frankfort on the Maine, and of Bremen, and at the university of Utrecht, and, in 1754, became a clergyman at Morat, in Switzerland. In 1758, he accepted an invitation from a congregation at Leipsic, and remained in this situation until his death, January 20, 1788. During these thirty years, he did great good, not only in his congregation, but also among the students of the university in Leipsic. Two hundred and fifty of his sermons have appeared in print. From 1769 to 1788, he published four collections, in six volumes, which went through several editions. After his death, his remaining sermons were published in nine volumes. The whole of his sermons have been published in fifteen volumes (Leipsic, 1789—1804). Two volumes have of late been translated into English, by reverend W. Tooke; also a small volume of his Devotional Exercises. Zollikofer also published a Hymn Book (eighth edition, Leipsic, 1786), besides translations of some English and French works. Garve wrote on the character of Zollikofer (Leipsic, 1788).

ZONARAS, John; a monk of St Basil, by birth a Greek, who lived during the latter part of the eleventh and the commencement of the following century. Before he renounced the world for the cloister, he had filled some distinguished offices about the imperial court, but becoming, at length, disgusted with its intrigues, gave himself up to a religious life, employing his leisure hours in the compilation of a History of the World, from the Earliest Periods to the Year 1118. In this work (of which an edition appeared at Paris, in two folio volumes, 1687), he follows, principally, the narrative of Dion Cassius; and all the earlier part of the book is a tissue of fable; but, as he approaches his own times, he becomes more entitled to attention, as all his mistakes arise evidently more from ignorance than design. There is also extant a commentary on the apostolic canons by him. His death took place about the year 1120.

ZONE. The whole surface of the earth is divided into five zones—the torrid, northern and southern temperate, and northern and southern frigid zones. The torrid zone extends $23\frac{1}{2}°$ north and south of the equator; and twice a year, the sun shines vertically on its inhabitants. This zone is bounded, on both sides of the equator, by the two

tropics; that is, the circles in which the sun reaches its greatest distance from the equator. As the rays of the sun here are nearly vertical, a perpetual summer reigns, and day and night, under the equator, are always equal; and even at the tropics, the difference is scarcely an hour. Owing to the nature and situation, however, of the countries in this zone, the heat is not every where the same. The warmest portions are the sandy deserts of Africa; far more temperate are the happy islands of the South seas, and still milder the climate of Peru. This last country contains mountains from whose summits the vertical sun-beams never melt the perpetual snow. The two temperate zones extend from the tropics to the polar circles. They contain the most populous countries, and the climate is various. As the distance from the tropics increases, the heat diminishes, the difference of the seasons becomes greater, the days and nights become more unequal, until we arrive at a point where, once a year, the sun does not appear above the horizon during the twenty-four hours, and, once a year, does not set for the same time. The circles passing through these points, parallel to the equator and the tropics, form the limits of the temperate zones, and are called the *arctic* and *antarctic circles*. The distance from the tropics to the polar circles, or the breadth of the temperate zones, both in the northern and southern hemispheres, is 43°. All beyond the polar circles, to the poles, is called the *frigid zones*. No land is known to exist in the southern frigid zone. The northern is habitable, though it produces neither grain nor trees, but only mosses, lichens, and a few bushes. The distance from the polar circles to the poles is $23\frac{1}{2}$°; but no one has yet penetrated to the poles themselves. Cook sailed as far as the seventy-first degree of latitude, towards the south pole, which is still more inhospitable than the north, as its winters occur at the time of the earth's greatest distance from the sun. To the north, the eightieth degree has been reached. (See *North Polar Expeditions*.) The characteristic of the frigid zones is, that day and night are more and more unequal the nearer you approach the poles; and for days, and even weeks, the sun is above or below the horizon. See *Seasons*.

ZOOGENE (from ζωον, animal, and γινναω, to produce). On the surface of the thermal waters of Baden, in Germany, and on the waters of Ischia, an island of the kingdom of Naples, a singular substance is collected, which has been called *zoogene*. It resembles human flesh with the skin upon it, and, on being subjected to distillation, affords the same products as animal matter. M. Gimbernat (*Journal de Pharmacie*, April, 1821) has also seen rocks covered with this substance, in the valleys of Sinigaglia and Negropont. Salverte (*Des Sciences Occultes*, 1829, 2 vols., 8vo.) considers this fact as explaining the stories of showers of pieces of meat, which figure in the number of prodigies of antiquity.

The name of *zoogene* is also given to a substance obtained from bones, by a chemical process which was discovered by M. Gimbernat. Much of it was sent, in 1827, to Greece, and much of it also was used by the French army, on the expedition to Algiers.

ZOOLITHES (from ζωον, animal, and λιθος, stone): fossil animal remains, great numbers of which have been found in digging into the surface of the earth. They differ from petrifactions, which are organized bodies, penetrated with stony matter, or completely converted into stony masses, by the gradual removal of the organic matter, the place of which has been supplied by stony deposits. Zoolithes have been divided into six classes—*tetrapodolithes*, or fossil quadrupeds; *ornitholithes*, or fossil skeletons of birds; *amphibiolithes*, or fossil remains of the *amphibia*; *ichthyolithes*, or fossil fish; *entomolithes*, or fossil insects; and *helmintholithes*, or fossil worms. See *Geology*, and *Organic Remains*.

ZOOLOGY (from ζωον, animal, and λογος, doctrine); that part of natural history which treats of animals. It is not confined to a description of the external forms of animals, but embraces all the phenomena of life and animal motion; the internal organization of each individual part; the processes of digestion, assimilation, nutrition, secretion and reproduction; the wonderful instincts, the varied dispositions, and the different degrees of intellect, manifested in the animal creation, from the half-vegetable zoophyte, up to man. Although it cannot be doubted that the attention of men was early attracted to an observation of the habits and natures of the lower order of animals, Aristotle seems to have been the first who furnished the world with any methodical information on this subject. His work Περι Ζωων Ἱστοριαι contains a great number of facts and observations. He compares the organization of the lower animals, in its different parts, with that of man, and treats of their mode of generation, habits, organs, &c., with great clearness and sagacity; and his principal divisions of the animal kingdom are so well founded that almost all of them are still substantially admitted. Among the Romans, zoology does not appear to have been at all cultivated, until the time of Pliny, who is the only Roman zoologist worthy of notice. His work (*Historia Naturalis*) contains multitudes of original traits, though it is only a compilation, and describes the habits and dispositions of animals with great felicity. He adopted, without examination, many fabulous stories, and too often neglected important details. Ælian (q. v.) was far inferior to the two above-mentioned writers, and his Natural History of Animals may be considered as the source of all the falsehood and error which so long disgraced this branch of natural history. Apuleius, and Athenæus the grammarian, are the only names that deserve mention, from the time of Ælian and Pliny to the beginning of the sixteenth century; and they added nothing to the stock of zoological science. At the latter period, flourished, among others, Belon, a French physician, who made the closest approach of any author of that time to any thing like systematic classification, in his *De Aquatilibus*, and particularly in his *De la Nature des Oiseaux* (Paris, 1555, folio); Salviani, author of a treatise, *Aquatilium Animalium Historia* (Rome, 1554, folio), which is superbly illustrated; Conrad Gesner, whose *Historia Animalium* (Zürich, 1550—1587, 4 vols., folio), arranged in alphabetical order, forms the foundation of modern zoology; and Aldovrandus, the most laborious of compilers, who devoted sixty years to his work on natural history, in fourteen volumes, folio, of which the greater part was published after his death. These earlier writers were followed, in the next century, by Redi and Swammerdam, to whom entomology is so much indebted, and by Ray (q. v.), the first naturalist, from the time of Aristotle, who produced any thing like a scientific arrangement. The works of Ray, under his own name, are *Synopsis Quadrupedum et Serpentum* (1683, 8vo.); *Synopsis Avium et Piscium* (1713); and *Historia Insectorum*; and he is also

considered to have had a large share in the compositions of his pupil Willoughby. But it was reserved for Linnæus to raise natural history to the rank of a science. Gifted with extraordinary powers of invention and discrimination, a most retentive memory, an unrelaxing industry, and the most ardent zeal in the cause of science, this great man observed, with the acutest sagacity, the subtilest affinities of organized nature. The general character of his works is order, precision, clearness, exactness of description, and an accurate knowledge of relations in detail. Buffon adorned natural history with the charms of eloquence, and was the first who extended its popularity beyond mere scholars and men of science. He was occasionally carried by the force of his imagination, into unfounded hypotheses; yet he had a truly philosophical spirit, could observe facts, and compare results, and possessed extensive information. The four great naturalists whom we have had occasion to mention, have exhibited nature under different aspects. Aristotle has shown us the profound combination of its laws; Pliny its inexhaustible riches; Linnæus its wonderful details; and Buffon its majesty and power. Since the time of Buffon, all the departments of zoology have been cultivated with a zeal, a minute accuracy, and an extensiveness of research, before unequalled. Our limits will not allow us to mention all those who have distinguished themselves in the cultivation of the whole field of the science, much less those who, confining themselves to particular branches of it, have yet rendered most important services by the exactness f their researches and the novelty of their views. Among the Germans, Illiger and Blumenbach hold the first rank as zoologists; but it is to France that we are chiefly indebted for the strong impulse which has been given, in our times, to the progress of natural science, and of zoology in particular. The name alone of Cuvier, whose recent death (1832) science deplores, sufficiently indicates the brilliant triumphs of natural history in that country. We have already treated, at some length, of some parts of this extensive subject, under the general heads *Animals*, *Anatomy*, and *Physiology*, and of the nomenclature of particular classes of animals under those of *Insects*, and *Entomology*, *Conchology*, *Fishes*, and *Ichthyology*, *Ornithology*, *Reptiles*, *Serpents*, &c.; and we shall now proceed to give some notice of the principal methods pursued by eminent zoologists, with a particular view of mastology, or the classification of the mammiferous animals.

The immense number of facts embraced by natural history could never be retained in the memory without an arrangment of divisions and subdivisions founded upon some distinguishing characteristics. Aristotle's system of arrangement was simple, resting on divisions derived mainly from the external structure, food, habits and locality. But though neither human nor comparative anatomy was then sufficiently cultivated to enable him to make the internal structure of animals the basis of his divisions, yet Aristotle was not insensible to the advantages of a more scientific distribution, and, with his usual sagacity, recommends to succeeding writers to turn their attention in that direction. Ray followed the advice of the great master, and remarked the great distinction, that some animals possessed lungs and a sanguineous system, while others were destitute of both. Linnæus, proceeding on the general arrangement of Ray, but with many extensions and improvements, divided the animal kingdom into six classes, founded mainly on the differences in the respiratory and sanguineous systems.

Class I.—*Mammalia*. All suckle their young; the heart has two auricles and two ventricles; blood red and warm; viviparous.

Class II. *Aves* (Birds). Characters of sanguineous system as in first class; viviparous.

Class III. *Amphibia*. Heart one auricle and one ventricle; blood red and cold; respiration voluntary.

Class IV. *Pisces* (Fishes). Heart and blood as in *amphibia*; respiration by gills.

Class V. *Insecta*. Heart one ventricle and no auricle; sanies cold, colourless; antennæ, or feelers.

Class VI. *Vermes* (Worms). Characfers as in V., except no antennæ, but tentacula.

He then subdivides the *Mammalia* into seven orders, the distinctions of which are taken from the difference in the number, form and situation of the teeth, without, however, neglecting the feet.

Order 1. *Primates*. Four incisors in each jaw, and one canine.—Genera: *homo, simia, lemur, vespertilio.*

Order 2. *Bruta*. No incisors.—Genera: *rhinoceros, elephas, trichechus, bradypus, myrmecophaga, manis, dasypus.*

Order 3. *Feræ*. Six conical incisors in each jaw, for the most part.—Genera: *phoca, canis, felis, viverra, mustela, ursus, didelphis, talpa, sorex, erinaceus.*

Order 4. *Glires*. Two incisors in each jaw; no canines.—Genera: *hystrix, lepus, castor, mus, sciurus, myoxus, cavia, arctomys, dipus, hyrax.*

Order 5. *Pecora*. No fore-teeth in the upper jaw; six or eight in the under.—Genera: *camelus, moschus, giraffa, cervus, antilope, capra, ovis, bos.*

Order 6. *Belluæ*. Obtuse fore-teeth in each jaw.—Genera: *equus, hippopotamus, sus, tapir.*

Order 7. *Cete*. No uniform character of teeth; aquatic pectoral fins; spiracula.—Genera: *monodon, baluna, physeter, delphinus.*

The other classes are subdivided in a similar manner. We shall enumerate only the orders. The distinctions of the *Aves* are taken chiefly from the beak; but the tongue, nostrils, feet, and other parts, are sometimes called in.

Order 1. Accipitres.
—— 2 Picæ.
—— 3. Anseres.
—— 4. Grallæ.
—— 5. Gallinæ.
—— 6. Passeres.

(See *Ornithology.*)

The *Amphibia* are divided into two orders.

Order 1. *Reptilia*. Furnished with feet, and breathing through the mouth. See *Reptiles.*

Order 2. *Serpentes*. Destitute of feet, and breathing through the mouth. See *Serpents.*

The fourth class, *Pisces*, is subdivided into six orders, the characters of which are taken from the belly-fins.

Order 1. *Apodes*. No ventral fins; embraces the eel kind, torpedo, &c.

Order 2. *Jugulares*. Ventral fins placed before the pectoral; cod, blenny, &c.

Order 3. *Thoracici*. Ventral fins under the pectoral; sucking-fish, goby, plaice, doree, &c.

Order 4. *Abdominales*. Ventral fins placed behind the pectoral; skate, salmon, pike, &c.

Order 5. *Branchiostegi*. Gills destitute of long rays; sunfish, pipe-fish, &c.

Order 6. *Chondropterygii*. Cartilaginous gills; lamprey, ray, shark, &c.

The fifth class, that of *Insects*, is divided into seven orders, the characters of which are mostly taken from the differences observed in the number and texture of the wings.

Order 1. Coleoptera.
—— 2. Hemiptera.
—— 3. Lepidoptera.
—— 4. Neuroptera.
—— 5 Hymenoptera.
—— 6. Diptera.
—— 7. Aptera.

The sixth class, *Vermes*, is subdivided into five orders.

Order 1. Intestina.
—— 2 Mollusca.
—— 3. Testacea.
—— 4. Zoophyta.
—— 5. Infusoria.

The arrangement of Linnæus, with all its advantages, had its defects. By confining himself too much to one kind of character, he often throws together subjects widely remote in their general appearance and economy; but he has carried the art of distribution, and the management of characters, to such a degree of clearness and brevity, that any person familiarized to his language may easily find the name and place of any being he wishes to observe. It still remained a desideratum to arrange the facts, of which the science treats, in a series of propositions, so graduated and successively subordinate, that the whole might represent the actual relations of living beings. For this purpose, it was necessary to group animals according to their different properties or organizations, so that those contained in such a group should bear a stronger natural resemblance to each other than to any individual of a different group. This arrangement is termed the *natural* method, for the formation of which zoology offers great facilities. In the arrangement of Cuvier, the completest and most scientific yet presented to the world, the great division of the animal world rests on the nervous and sensorial, and not on the circulatory and respiratory, systems. From the study of the physiology of the natural classes of vertebrated animals, Cuvier discovered the respective quantity of respiration, the reason of the quantity or degree of motion, and, consequently, the peculiar nature of that motion. This last gives rise to the peculiar form of their skeletons and muscles; and with it, the energy of their sensations, and the force of their digestion, are in a necessary relation. Thus zoological arrangement, which had hitherto rested on observation alone, assumed a truly scientific form. Calling in the aid of comparative anatomy, it involves propositions applicable to new cases, and thus becomes a means of discovery as well as a register of facts; and, by correct reasoning, founded on copious induction, it partakes of the demonstration of mathematics, and the certainty of experimental knowledge. Having examined the modifications which take place in the organs of circulation, respiration and sensation in the invertebrated animals (a title first given by Lamarck, instead of the erroneous one of *white-blooded* animals, by which they were previously distinguished), Cuvier has formed a new division, in which these animals are arranged according to their actual relations.

The following is a view of the system as exhibited in the second edition of the *Règne Animal*, published in 1829 (5 vols., 8vo.). Of the four great divisions into which the animal kingdom is divided—*Vertebrated*, *Molluscous*, *Articulated*, and *Radicated* animals—and of their general subdivisions, an account is given in the article *Animal*.

The first subdivision, of the class *Mammalia*, is again subdivided into eight orders, as follows:—

### Order I.—Bimana.

Having hands at the anterior extremities alone.

One species—man.

### Order II.—Quadrumana.

Having hands at the four extremities.

*Simia* (Monkey).
*Ouistiti.*
*Makis*, or *Lemurs.*

### Order III.—Carnassiers.

#### Family I.—Chiroptera.

*Vespertilio* (Bat).
*Galeopithecus.*

#### Family II.—Insectivora.

*Erinaceus* (Hedgehog).
*Tendrac* (*Centenes*, Illig.).
*Cladobates* (Tupaia.)
*Sorex* (Shrew).
*Mygale* (Desman).
*Chrysochloris.*
*Talpa* (Mole).
*Condylura.*
*Scalops* (Shrew-Mole .

#### Family III.—Carnivora.

##### Tribe I.—Plantigrade.

*Ursus* (Bear).

##### Tribe II.—Digitigrade.

*Mustela* (Marten).
*Canis* (Dog).
*Viverra* (Civet).
*Hyœna.*
*Felis* (Cat).

##### Tribe III.—Amphibious animals.

*Phoca* (Seal).
*Trichechus* (Morse).

### Order IV.—Marsupial animals.

*Didelphis* (Opossum),
*Dasyurus.*
*Phalangista.*
*Potorous* (*Hypsiprymnus*, Illig.)
*Macropus* (Kangaroo.)
*Koala* (*Lipurus*, Goldf.) *Phascolarctos.*
*Phascolomys* (Wombat).

### Order V.—Glires (rodentia).

*Sciurus* (Squirrel).
*Mus* (Rat).
*Helamys* (*Pedetes*, Illig.).
*Spalax.*
*Orycterus.*
*Geomys* (*Pseudostoma*, Say).
*Diplostoma.*
*Castor* (Beaver).
*Couia* (*Myopotamus*, Comm.).
*Hystrix* (Porcupine).
*Lepus* (Hare).
*Cavia* (Guinea Pig).

### Order VI.—Edentata.

#### Tribe I.—Tardigrade.

*Bradypus* (Sloth).
*Megatherium* (fossil).

#### Tribe II.—Common Edentata.

*Dasypus* (Tatou).
*Orycteropus.*
*Myrmecophaga* (Anteater).
*Manis* (Pangolin).

#### Tribe III.—Monotrema.

*Echidna* (Spinous Anteater).
*Ornithorhynchus* (*Platypus*, Shaw).

### Order VII.—Pachydermata.

#### Family I.—Proboscidiana.

*Elephas.*
*Mastodon* (fossil).

#### Family II.—Common Pachyderamata.

*Hippopotamus.*
*Sus* (Hog).
*Phacochœrus.*
*Dicotyles* (Peccary).
*Anoplotherium* (fossil).
*Rhinoceros.*
*Hyrax.*
*Palæotherium* (fossil).
*Lophiodon* (fossil).
*Tapir.*

FAMILY III.—SOLIPED.

*Equus* (Horse).

ORDER VIII.—RUMINANTIA.

(Without horns.)

*Camelus.*
*Moschus.*

(Horned.)

*Cervus* (Deer).
*Camelopardalis* (Giraffe).
*Antelope.*
*Capra* (Goat).
*Ovis* (Sheep).
*Bos* (Ox).

ORDER IX.—CETACEA.

FAMILY I.—HERBIVOROUS.

*Manatus* (Lamantin).
*Dugong* (*Halicorus*, Illig.)
*Stelleras* (*Rytina*, Illig.)

FAMILY II.—COMMON CETACEA.

*Delphinus* (Dolphin)
*Narwhal* (*Monodon*, L.).
*Cachalot* (*Physeter*, L.)
*Balæna.*

CLASS II. *Aves.* See *Ornithology.*
CLASS III. *Reptiles.* See *Reptiles.*
CLASS IV. *Pisces.* See *Ichthyology.*

The second general division of Cuvier comprises the *molluscous* animals (see *Conchology*), the third the *articulated* animals (see *Entomology*), and the fourth the *radiated* animals (see *Zoophytes*).—Consult Fleming's *Philosophy of Zoology* (2 vols., Edinburgh, 1822), and Griffith's *Animal Kingdom of Cuvier, with additional Descriptions*, (London, 1827, et seq. 5 vols., 8vo.)

ZOOPHITE (from ζωον, animal, and φυτον, plant), in a wider sense, comprises the five classes of animals included by Cuvier in the fourth great division of the animal kingdom, to which he gives the name of *radiated* animals, from their often exhibiting a radiated form of the whole body, or of some of its parts. We have described the general characters of this division, and the five classes of which it consists, in the article *Animal*. They are termed *apathica* (α, without, παθος, feeling) by Lamarck, from their all being destitute of organs of sense, and even of nerves, and from his considering their motions to be mere automatic phenomena, not accompanied with feeling. They form the division called *acephala* (α, without, κεφαλη, head) by Latreille, from their having no part analogous to the head of the articulated classes. In a narrower sense, the term is applied to the fourth class of this division, which we have described at great length in the article *Polypi*.

ZOOTOMY. See *Anatomy.*

ZOPYRUS; a Persian, son of Megabyzus, who, to show his attachment to Darius, the son of Hystaspes, while he besieged Babylon, cut off his ears and nose, and fled to the enemy, telling them that he had received such treatment from his royal master because he had advised him to raise the siege, as the city was impregnable. This was credited by the Babylonians; and Zopyrus was appointed commander of all their forces. When he had totally gained their confidence, he betrayed the city into the hands of Darius, for which he was liberally rewarded. Darius used to say that he had rather have Zopyrus not mutilated than twenty Babylons.

ZORNDORF, BATTLE OF; the bloodiest, and in many respects, one of the most remarkable battles in the seven years' war, fought on Aug. 25, 1758, between the Prussians commanded by Frederic the Great, and the Russians under general Fermour, the latter 50,000 men strong, the former 30,000. Frederic was victorious. The Russians lost towards 19,000 killed, and 3000 taken prisoners; the Prussians 10,000 killed. Frederic was obliged, immediately after, to hasten to Saxony.

ZOROASTER, OR ZERDUSHT; the distinguished reformer of religion in Media, whose doctrines also spread into Persia. There are no certain accounts of him: his history is mostly enveloped in darkness. It is highly probable that he was by birth a Median, and lived under the Median king Gustasp, who, according to Hammer, was the same as Darius Hystaspes, but, according to others, Cyaxares I. If the last supposition is correct, he lived not much before the time of Cyrus. The religion introduced by him ought not to be considered as entirely new. From the investigations of Hammer, it would appear that pure fire-worship (in which, however, the fire was only symbolical) was the oldest religion of the Bactro-Median race; and from this the worship of the planets sprung. Zoroaster refined this fire-worship. It is not settled whether his improvements were, at first, adopted by the magi only, or whether they were received by the Medians generally, and afterwards communicated by them to the Persians, their conquerors. The latter supposition has much in its favour, particularly the circumstance that the Persians showed a great readiness to adopt foreign religions, which may have arisen, in a great measure, from their deification of the powers of nature. Shortly after the time of Socrates, the religion of Zoroaster had spread throughout Persia.

The following are its principal doctrines:—From eternity there have existed two beings, Ormuzd and Ahriman, the principles of the universe. Ormuzd is pure, eternal light, the original source of all perfection. The nature of Ahriman, likewise belonged originally to light; and so far he was good; but because he envied the light of Ormuzd, he obscured his own, became an enemy of Ormuzd, and the father of evil and of all bad beings, who join with him in a contest with the good. Ormuzd and Ahriman performed the work of creation at different epochs, and brought into existence various species of beings. Ormuzd created, by his living word, that is, the power of his will, the community of good spirits—first, six immortal spirits of light, for the service of his throne (Amshaspand); then twenty-eight subordinate spirits, representatives of the months and days; and, at last a multitude of human souls. Ahriman produced a number of bad spirits, six arch-devs, spirits of darkness, and innumerable devs of lower rank. The good dwell with Ormuzd in light. Ahriman lives with his creatures in the kingdom of darkness. 3000 years Ormuzd ruled alone; after which he created material beings, in their various degrees; at last, man, and, after the labour, celebrated the first festival of creation with the good spirits. Again he ruled in this world of innocence and happiness 3000 years. In the next period of equal length, begins the contest between light and darkness, Ormuzd and Ahriman, who, in a continual struggle, divide the dominion of the world. The following 3000 years extend and confirm the power of Ahriman: afterwards his power declines; the devs sink to nothing; their former prince does homage to Ormuzd; the bad disappear. The dead arise; the primitive kingdom of happy souls, under the government of Ormuzd, returns

Thus the world is made to continue 12,000 years. The twelve signs of the zodiac play a part: to each is assigned a thousand years. The number seven, as presented in the seven amshaspands, and seven arch-devs, including Ormuzd and Ahriman, refers to the planets. The subordinate genii of the material world are the personified parts and elements of nature. The spirits of men pass through a state of happiness before they reach the body; and, in that heavenly state, contend with bad spirits, protect the good upon earth, and are reverenced by them. Men themselves are either the servants of Ormuzd, through wisdom and virtue, or the slaves of Ahriman through folly and vice. The former pass, after death, over the bridge 'Shinevad, into the dwelling of the happy; the latter fall into hell. When Ahriman is conquered, the resurrection of the body follows, and the earth is adorned for the residence of the virtuous.

The essential doctrines of Zoroaster are found in the *Zend-Avesta*, the most sacred record of his religion. The discovery of this ancient monument by Anquetil du Perron, did not, at first, receive credit. He left Paris in 1755, to investigate the religion of all the nations of Asia not professing the Mohammedan faith, particularly the inhabitants of India—an undertaking which he successfully executed notwithstanding numerous obstacles. (See *Anquetil du Perron.*) At Surat, he obtained, from some learned Persians, a copy of the books of the *Zend-Avesta*, in the Zend and Pehlvi languages. The latter he studied himself, and translated in conjunction with learned natives, the *Zend-Avesta* into modern Persian. Having returned to France, he gave to the library in Paris the manuscripts which he had collected in India, and published a translation of the *Zend-Avesta* into the French language, with notes. The celebrated Orientalist, Sir William Jones, expressed himself warmly against the extraordinary account of Anquetil; but Kleuker, the German translator of the *Zend-Avesta*, has combated the doubts entertained on the subject with much force. Late inquiries into the religions of antiquity, particularly those which relate to India, have illustrated many points in the doctrines of Zoroaster. The literary treasures which the celebrated linguist Rask, has lately brought from India, promise new light, and tend to confirm the genuineness of the *Zend-Avesta*. (See *Zend-Avesta.*) But the books which are known under the name of the Oracles of Zoroaster, and which have stood in high repute, particularly among mystics, and students of the secret sciences, by which men hoped to discover the philosopher's stone, are, obviously, forgeries of a later period.

ZRINYI, OR ZRINI, NICHOLAS, count of, general of the emperor Ferdinand I., ban of Croatia, Dalmatia, and Sclavonia, a modern Leonidas, was born in 1518. When but a boy of twelve years, he distinguished himself so much during the siege of Vienna that Charles V. gave him a horse and gold chain. He also distinguished himself in the wars against John of Zapolya, and sultan Suleyman (Soliman), the ally of Zapolya, and did much to improve light cavalry. His noble figure, his vivacity, liberality, and strict justice, gained him the love of his soldiers to an uncommon degree. In 1542, at the battle of Pesth, his sudden arrival struck dismay into the enemy, and decided the victory. For twelve years he defended Croatia, over which he presided as ban, against the Turks, and repelled them, in 1562, from Szigeth. The greater part of Hungary, however, was already a Turkish pachalic, and the rest was obliged to pay tribute. Suleyman the Invincible was desirous of taking Szigeth. A defeat which the vanguard of the sultan sustained, at Sziklos, from the troops of Zrinyi, excited his wrath. The famous grand vizier, Mehmed Sokolowich, a renegade of Croatia, marched with 65,000 men, to the attack of Szigeth. A bridge was thrown over the swollen Drave, under difficulties such as could be overcome only by the iron will of the Turkish despot; and the army passed over the river between August 1 and 9. Zrinyi collected his soldiers, 2500 in number. They swore—first he himself, then each soldier to his captain, and then all the captains to him—to die for their faith, their emperor and their country. Szigeth lies between two rivers, as on an island. When Zrinyi mustered his troop, they amounted to 3000 men. The Turks bombarded day and night, the "old city," which was but slightly fortified. The besieged made many daring sallies; but, after they had defended the place, inch by inch, and repulsed several assaults, they were obliged to burn it, and to retreat to the "new city." The Turks now raised mounds of earth, from which they could fire over the whole city Zrinyi made every effort to prevent the Turks from filling up the fosse; but they were too numerous and indefatigable. He now gave up the "new city" to the flames, and threw himself into the castle. The fire of the Turks was incessant, and they were also active in excavating mines. Zrinyi had no miners. The Hungarians made a sally, repulsed the Turks, spiked several of their cannons, but suffered a considerable loss. From August 26 to September 1, seven assaults, or more, were made daily; but the Hungarians always drove back the Turks. Many proposals for capitulation were made to Zrinyi; but he rejected them all; and even the sultan's threat to kill his son, whom the Turks pretended to have in their power, could not change his purpose. Soliman, exasperated at his obstinacy, offered 1000 gold guilders for Zrinyi's head, and finally died of rage, September 4. The grand vizier kept his death a secret. September 5, the Turks succeeded in burning the outer castle. Zrinyi retired to the inner works. These, however, contained no provision nor ammunition. On the 7th the Turks undertook a general assault. The cinders fell even into the apartments of the count. The castle was in flames. Zrinyi now assembled his followers, and said, "Remember your oath. We must go forth, or burn, or perish with hunger. Let us die like men. Follow me, and do as I do." Saying this, he rushed out: his men, now reduced to 600, followed. He received two balls, but continued fighting until a third ball killed him. The whole garrison shared the fate of their commander. The Turks thronged into the burning castle, but Zrinyi had fired trains leading to the powder chambers. These exploded and a large number of the enemy perished. Above 20,000 Turks had been killed or died of sickness during the siege. The Turks retained the place until 1689. The aga of the janizaries fixed the head of Zrinyi before the tent of the sultan; but it was afterwards sent to the imperial general count Salm. The family of the Zrinyis became extinct in 1702.

ZUG, the smallest of the Helvetic cantons, lies between the cantons of Zürich, Schweitz, Lucerne and Aargau. It has a superficial area of 116 square miles, and contains 14,710 inhabitants, of German origin, and of the Roman Catholic religion. In

regard to its natural characters, it may be divided into two distinct parts, of which the north western is composed of fertile valleys, and the south eastern of a mountainous land, in which, however, none of the summits rise above an elevation of 5000 feet, and the descent is gentle. A considerable part of the surface is occupied by lakes Zug and Egeri. The inhabitants are employed almost exclusively in the breeding of cattle, and the cultivation of orchards. The constitution is democratic, the supreme power being exercised by popular representatives in different bodies. The quota of the canton in the army of the confederacy is 250 men, and the pecuniary contingent 1250 Swiss francs. The chief place is the town of the same name, with 2800 inhabitants, on lake Zug, in a delightful situation, at the foot of a mountain of the same name, surrounded by fertile meadows, orchards, vineyards, and pretty country houses. The lake bathes the foot of Righi on the south; behind rises mount Pilate; and, in the distance, the snowy summits of the Bernese Alps are seen towering up into the sky. The lake is about ten miles long and from two to three wide.

ZUIDERSEE, or ZUYDER-ZEE (i. e. *South-sea*); an inland sea or gulf of the North sea, or German ocean, surrounded chiefly by the Dutch provinces of Holland, Overyssel, and Friesland. Its length from north to south, is about 80 miles; its breadth varies from 15 to 30; superficial area, 1200 square miles. It is said to have been, in remote ages, a lake, until the barrier on the north-west, separating it from the German ocean, was swallowed up by some inundation of the sea. This opinion is confirmed by the position of the islands Texel, Vlieland, &c., which, with intervening shoals and sand banks, still form a kind of defence against the ocean. The trade of Amsterdam is carried on along the Zuyder-Zee, the entrance to which is at the Texel. The communication of this sea with the lake of Harlem is by the south, the inlet on the banks of which Amsterdam is built. In so level a country there are few rivers to flow into this sea: of those that do so, the Yssel is the largest. The extent of the Zuyder-Zee exposes it to great agitation in tempestuous weather; yet, on proceeding from South Holland to Friesland, it is usual to sail across the southern part of it, called the Lemmer, instead of making the circuit by land. The Y is a gulf of the Zuyder-Zee, which forms the connexion with the lake of Harlem, and of which a part is called the Pampus.

ZUINGLIUS. See *Zwingli*.

ZULLICHAU, a town in the government of Frankfort, in the Prussian province of Brandenburg, 112 miles from Berlin, 17 miles east of Crossen, lon. 15° 44′ E.; lat. 52° 8′ N., a league from the Oder, has 4700 inhabitants, an academy, an orphan asylum, and a seminary for schoolmasters. (See *Schools*.) It was formerly a thriving town, having many manufactories of broadcloth, large quantities of which were sent into Poland, Russia, and even China; but since Russia has protected the Polish manufactures, Züllichau has much declined. The manufacture of silk, however, has in some measure supplied the place of that of cloth. On the banks of the Oder, much wine is made; but its quality is less to be commended than the industry of the cultivators. The town belongs, with the circle of the same name (300 square miles, with 30,000 inhabitants), to the duchy of Crossen, which, in 1538, fell to Brandenburgh.

ZUMBO. See *Wax Figures*.

ZUMSTEEG, John Redolphus, a German composer, was born in 1760, in Sachsenflur, in Würtemberg, and educated in the ducal school near Stuttgart, enjoyed the instruction of the members of the ducal chapel, and, when yet a pupil, composed several operettas, cantatas and songs for the Robbers of Schiller, whose friend he was. He was then appointed violoncellist in the chapel of the duke, and, in 1792, concert-master and director of the opera. He died in 1802, of apoplexy. His songs and glees are some of the best which the Germans possess. He also composed operas and a mass, &c.

ZURICH; a canton of Switzerland, bounded north by Schaffhausen, north-east and east by Thurgau, south-east by St Gall, south by Schweitz and Zug, west by Aargau, and north-west by Baden (see *Switzerland*); square miles, 953; population, 224,150. The general aspect is pleasant, abounding in hills and valleys, but destitute of the magnificent scenery that marks the interior and south of Switzerland. The climate is mild, and the soil is tolerably fertile, and well cultivated. Rich pastures and extensive orchards abound, and, in some parts, there are fine tracts of wooded country. Corn, wine, cattle, butter and cheese are some of the principal products. The manufactures are considerable, of cotton, silk stuffs, linen, woollen, and leather. The inhabitants are of German origin, and, with the exception of two societies, are Calvinists. The government, which was aristocratico-democratic in its administration, was new-modelled in 1831. The legislative power was vested in a great council of 212 members, 25 of whom formed an executive council, and court of final appeal.

ZURICH; a city of Switzerland, capital of the above canton, on the Limmat, at the north extremity of the lake of Zürich, in a narrow valley, between hills, thirty-six miles south-west of Constance, fifty-five north-east of Berne; lon. 8° 32′ east; lat. 47° 22′ north. It is pleasantly situated, fortified with a wall and ditch, tolerably neat and clean, though most of the houses are old-fashioned. It has four Reformed churches. Its public buildings are not remarkable, but the scenery around is striking, and there are beautiful promenades. There are numerous private gardens; and in no place in Europe, except Haarlem, is more attention paid to fine flowers. Having the advantage of water communication by means of its lake and river, it has long been a place of manufacture and trade. Woollens, linens, cottons, leather, and silk, are its chief manufactures. Few places of the size of Zürich have surpassed it in the cultivation of literature. For five centuries it has been a town of literary distinction. It has a public library of 40,000 volumes, *collegium humanitatis*, *gymnasium Carolinum*, a school for the deaf and dumb, and one for the blind, a society of physics, economics, and natural history, a military school, a medical seminary, and various other institutions. Natives, Conrad Gesner, Solomon Gesner, John James Gesner, J. C. Lavater, Hirzel, and Pestalozzi. Population, 14,000. Zürich has, in recent times, been the theatre of some interesting political events. In the war carried on by the second coalition against the French republic (1799), Zürich became an important point in the military operations. On the fourth and fifth of June, the archduke Charles gained some advantages over the French forces here, and, on the seventh, occupied Zürich. In August, it became the theatre of new conflicts;

and, on the twenty-fourth of September, Masséna defeated here the allied forces of Russia and Austria, and compelled them to evacuate Switzerland.

ZURICH; a lake of Switzerland, extending, in the form of a crescent, chiefly through the canton of Zürich, but partly also between those of Schweitz and St Gall It is divided into two parts by the strait of Rapperswyl, a quarter of a mile over, crossed by a bridge. In other places, the breadth varies to nearly five miles. The length is thirty miles. This lake, without rivalling that of Geneva in its sublime scenery, is one of the finest in Europe, being surrounded by a populous and well cultivated country, and the prospects on its banks being richly varied. Behind and above the vine-covered hills which enclose it, loftier summits rise gradually higher and higher, till the eye finally rests on the glaciers of Glarus, Schweitz, and the Grisons. The prospect is finest from the lake itself, where, as you sail along, the scene is ever shifting and changing. Upon the little island of Ufnau, was formerly seen the tomb of Von Hutten, who died here in 1523.

ZURLITE; an imperfectly described mineral, found in Mount Vesuvius, with calcareous spar. It occurs in rectangular prisms, or in botryoidal masses, of an asparagus-green colour. It yields to the knife, but emits sparkles with steel. Specific gravity, 3·274; melts with borax into a black glass.

ZURLO, Giuseppe, count de; an Italian politician, born, in 1759, at Naples. In 1783, when an earthquake had devastated many parts of the kingdom, and men of merit were wanted to heal the wounds of the provinces, Zurlo was sent into Calabria. He was afterwards made judge, and, in 1798, was invited to become minister of finance; but he declined the offer. The king, however, when he fled to Sicily, left him in the administration of the finances. The people, entertaining unfounded suspicions against him, seized his person, and destroyed his house. After a few months, when the royal government was re-established, he was made minister of finance. The country was inundated with paper money, the credit of the government destroyed, and large sums wanted to meet the public exigencies. Zurlo re-established the finances, and refused the rewards offered him for his services, saying that he had always found himself honoured by his poverty. In 1803, his ministry came to an end. He refused every offer of the new government, until, in 1809, Joseph made him minister of justice. He did much within the few months that he remained in this office; but the government, wishing to give him a more extended sphere of action, made him minister of the interior. This department required an entire reorganization. Zurlo took the best measures for the promotion of agriculture, manufactures, public instruction, the fine arts, finances, &c. He also put the hospital for the insane, at Aversa, on an excellent footing. On the restoration of the old government, he accompanied the queen (madame Murat) to Trieste, where he separated from her; fell sick in Venice, and, during his recovery, made a translation of Anacreon, which appeared there anonymously. He then lived for three years in Rome, and, in 1818, received permission to return to Naples, where he was made minister of the interior in 1820, but, in consequence of the attacks of fanatics, lost the office within a few months. After that time, he lived as a private man, in Naples, where he died in 1828.

ZURZACH; a small town in the canton of Aargau, in Switzerland with 800 inhabitants; thirty-three miles east of Basle. Here is a church dedicated to St Veronica, who is said to have wrought many miracles in Zurzach, and to have been buried there; whence it became a place of pilgrimage much resorted to by devout Catholics. (See *Veronica*.) It still has two fairs which originated from the former pilgrimages, and are much frequented by German, Italian, and French traders.

ZUYDERSEE. See *Zuidersee*.

ZWEIBRUCKEN. See *Deux-Ponts*.

ZWINGLI, or (as it is often Latinized) ZUINGLIUS, Ulrich, the Swiss reformer, was a contemporary of Luther, and was born at Wildenhausen, in the Swiss county of Toggenburg, Jan. 1, 1484. Ulrich was the third of eight sons of the bailiff of that place. He studied at an early age in Basle and Berne, and continued his studies in Vienna, where he occupied himself with philosophy, and again in Basle, where he devoted his attention to theology, under the direction of Wyttenbach. In 1506, Zwingli became parish priest at Glarus, and here employed his time, as Luther had done in the Augustine monastery at Erfurt, in the diligent reading of the Holy Scriptures. He copied the letters of Paul in the original Greek, and even learned them by heart—an acquisition which afterwards proved of great service to him in his public discussions. He accompanied the forces of Glarus during the campaigns of 1512, 1513 and 1515, in Lombardy, in the cause of the pope against the French, in the capacity of chaplain, and was rewarded for this service by the grant of a pension from the pope. In 1516, he became preacher in the convent of Einsiedeln, then a celebrated place of pilgrimage. Here he showed a spirit far in advance of the age, raising his voice not only against the corruptions and abuses that had crept into the church, and infected the public morals, but even against the pilgrimages in honour of Our Lady of Einsiedeln, and calling upon the bishops of Sion and Constance to promote a reformation of religious doctrines, in conformity with the dictates of the divine word. At this time, however, his conduct was so far from exciting suspicion, that, in 1518, the papal legate, Pulci, gave him the diploma of acolyte chaplain to the holy see. He was not long after, invited to Zürich, and entered on his office of preacher in the cathedral, Jan. 1, 1519, with a discourse in which he declared himself for the use of the Scriptures in their genuine form, without regard to the prescribed texts and lessons. At Zürich, Zwingli delivered a series of sermons on the Holy Scriptures; and these discourses, with those against error, superstition and vice, laid the foundation for his future work of reformation. The occasion which called him forth was similar to that which had aroused Luther. In 1518, Bernardin Samson, a Franciscan monk of Milan, appeared in Switzerland, with the intention of raising money by the sale of indulgences. Zwingli, who was then preaching at Einsiedeln, opposed him there, and afterwards in Zürich, with all the power of his eloquence, and brought the indulgences into so much odium that Samson was not even permitted to enter Zürich; and the bishop of Constance, to whom the vile arts of the monk were offensive, supported Zwingli in this measure. From this time, Zwingli gradually went further in his plans, with the approbation not only of the Zurichers, but of the great body of the Swiss in general. In Zürich, his reforms were so far promoted by the government, that, in 1520, a decree was issued, ordering that

the Holy Scriptures should be taught without human additions. In 1522, the reformation was extended to external ceremonies. In that year, Zwingli wrote his first work against the fasts of the church, and began the study of Hebrew. The offers of promotion which he received from pope Adrian VI. had not power to make him waver. In 1523, the government of Zürich invited all theologians to a public conference in Zürich, to convict, if possible, Zwingli of an error in doctrine. About six hundred persons, clergy and laymen, were present at this disputation. Zwingli exhibited his opinions in the form of sixty-seven propositions, which were to form the subject of discussion; but the objections of the celebrated John Faber, afterwards bishop of Vienna, appeared so unsatisfactory to the magistracy of Zürich, that they adhered still more zealously to the preachings of Zwingli. The second dispute, in which Zwingli urged his objections to images and the mass with such force that the former were soon after removed from the churches, and the latter abolished, was held, in the same year, in the presence of nine hundred persons. In 1524, Zwingli married Anna Reinhard, a widow, and, the next year, published his Commentary on true and false Religion. The reformation in his native land was now fixed upon a firm base; and he continued the work with undiminished zeal, warmly supported by the public authority, which suppressed the mendicant orders, required all questions of marriage to be settled by the civil tribunals, and established a better administration of the church revenues. In general, Zwingli agreed in his opinions with the German reformers: like them he assumed the Bible as the only rule of faith, rejected all human additions, attacked the ambition and rapacity of the clergy, as well as the superstitions they had countenanced, and aimed to restore the church to the simplicity of primitive times. His views were on some points peculiar, particularly in regard to the real presence, and on some less important matters relative to the liturgy. In order to remove this wall of partition from between the two parties which adopted the new doctrines, a meeting between the Saxon and Swiss reformers was held at Marburg (Oct. 1—3, 1529), at the suggestion of Philip the Magnanimous, landgrave of Hesse. The former were represented by Luther and Melanchthon, the latter by Zwingli and Œcolampadius. The conference was conducted with moderation, and the otherwise violent Luther treated Zwingli with a brotherly kindness. Although a complete union was not effected, yet a convention was agreed upon, the thirteen first articles of which, containing the most important matters of religious faith, were recognised by both parties; and the fourteenth declared that, though they could not agree as to the real presence of Christ in the Eucharist, they would conduct towards each in the spirit of Christian charity. In 1531, an open war broke out between Zürich on the one side, and the Catholic cantons of Lucerne, Schweitz, Uri, Underwalden and Zug on the other; and Zwingli was commanded to take the field, bearing the banner of the canton, which it had been usual for an ecclesiastic to support. A battle ensued on the 5th October, and Zwingli called upon his countrymen "to trust in God." But the enemy were more than twice as strong as the Zurichers, and under better officers: the latter were therefore defeated, and Zwingli was among the slain. The reformed church afterwards received from the hands of Calvin its present organization. —See Hess, *Vie de Zwingli* (Paris, 18.0), and Rotermund, *Life of Zwingli* (in German, Bremen 1818).—An edition of his works appeared at Zürich in 1819 seq., 4 vols.; and a more complete one has been published at the same place more recently (1828 seq.).

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[Those articles in the Supplement which have an Italic *a* within parentheses after the catchword, are *additional* to articles in the body of the Encyclopedia under the corresponding titles. Where the articles have no such distinction, they are to be considered as in themselves new and entire.]

## ABANO—ABBOTT.

ABANO; a village in the neighbourhood of Padua, celebrated of late years for its mud-baths, and long ago as the birth-place of the celebrated physician Abano, who takes his name from this the place of his birth. The mud-baths are taken out of the hot basins in which they are found, and are nothing more than warm mud richly impregnated with sulphur and certain other salts, especially lime, common salt, and soda. This mud is applied either generally or partially, as the case of the patient may demand. So valuable is the mud considered, that it is kept after having been used, and at the conclusion of the season, returned to the hot fountains, where it is left till the ensuing spring, that it may be impregnated anew with the mineral virtues which they contain. The muds on being taken out are intensely hot, and must be kneaded or stirred some time before they can be borne. When applied, the operation very much resembles taking a stucco cast. They retain their heat, without much sensible diminution, for three quarters of an hour, producing the appearance of a slight rubifacient having been applied to the part, and producing a profuse perspiration from the whole body, a disposition which continues more particularly in the part to which they have been applied, when unchecked by cold. Hence heat is considered as so essentially seconding their operations, that this watering place, or rather mudding place, is nearly deserted by the end of August. The baths, though sometimes considered a remedy in themselves, are most generally held to be mere auxiliaries to the muds, and usually serve only as a prologue and interlude to the dirty performance, they being supposed to open the pores, and dispose the skin to greater susceptibility. The warm sulphureous water and mud baths cannot fail of being powerful remedies in obstinate rheumatic, hepatic, and cutaneous affections of a chronic character; and those who labour under these affections, and can find no relief at home by warm sulphureous baths, and the internal use of the Harrowgate, Moffat, or the Donegal sulphureous waters, may perchance find relief from the mud-baths of Abano. These springs and muds do not appear to have been known to Peter de Abano.

ABANO, Peter de, a celebrated physician, was born at Abano, near Padua, in the year 1250. After studying Greek at Constantinople, he repaired to Paris, where he took his degree of medicine and philosophy. Before returning to his native land, he visited England and Scotland. In 1302, he was appointed professor of medicine at Padua, but he soon relinquished it, and went to practise physic at Bologna, where his reputation rose very high. The philosophical studies and the liberal sentiments of Abano, however, drew upon him the notice of the inquisition. In 1306, he was denounced before the inquisitorial tribunal, as guilty of necromancy and divination. He was, however, by the powerful intercession of his friends, freed from these charges, but not long after, he was again dragged before the inquisition, and accused of the more popular crimes of heresy and atheism. The health and spirits of Abano sunk under this persecution, and death rescued him from the grasp of his enemies, in 1315. As the only display remaining of their impotent fury, the inquisition burned his effigy in the market place at Padua. The principal work of Abano is entitled, *Conciliator differentiarum philosophorum et precipue Medicorum*, which was first published at Venice in 1471, and though it has passed through many editions, is now scarce. He wrote a variety of other works, particularly three on Astrology, which science was a favourite study of Abano's.

ABBOTT, Charles, Lord Tenterden, an eminent lord chief justice of the court of queen's bench, was born at Canterbury on the 7th Oct. 1762. His education commenced at the free grammar school of that city, and he was afterwards sent to Oxford, where he soon obtained both a fellowship and tutorship. The tutorship was in the family of Mr Justice Buller, by whom he was advised to apply to the study of the law, with an encouraging prediction that he would rise high in that profession. He accordingly entered at the Inner Tem-

ple, where he applied himself with the utmost assiduity to the acquirement of legal knowledge. On being called to the bar in 1796, he joined the Oxford circuit, and soon became extensively employed as a counsel, his income averaging, before he was raised to the bench, about £10,000 a year. In 1816, through the influence of lord Ellenborough, he was appointed a puisne judge in the court of common pleas, and, next year, was raised to the court of king's bench, on which occasion he received the honour of knighthood. In November, 1818, by the retirement of Lord Ellenborough, he became lord chief justice. The nomination was fully justified by the acute judgment and deep legal learning which he displayed in his high office. Few judges have decided so much and so well, and his rulings have been rarely reversed. In 1827, he was created baron Tenterden, of Hendon, in the county of Middlesex. His last appearance on the bench was on the 26th of October, 1832, being the second day of the trial of the magistrates of Bristol. After he returned home on that day, he was unable again to leave it, being seized with an illness, which carried him off on the 4th November, 1832. Lord Tenterden married in 1795, a daughter of John Lagier Lamotte, Esq., by whom he left two sons and two daughters. As a legislator, his lordship introduced into the house of lords several useful and important bills, which have become the law of the land. In 1802, his lordship (then Mr Abbott) published "A Treatise on the Law relative to Merchant Ships and Seamen," which is the standard work on the subject, and has gone through several editions.

ABERCROMBY, Sir Ralph, (*a.*) Sir Ralph was born in 1734, not 1738, as stated in the Encyclopedia. His son James, late one of the members of parliament for the city of Edinburgh, and speaker of the house of commons, was elevated to the peerage in 1839, under the title of Lord Dunfermline. One of his grandsons is member for Stirlingshire.

ABERDEEN, (*a*). At the commencement of the Encyclopedia, less space was allowed for local topography than was afterwards found could be afforded. Aberdeen, accordingly, standing early on the list, was treated in a merely summary manner. We are glad at the opportunity the Supplement gives of entering more into details regarding this ancient and important seat of learning and commerce.

Aberdeen is the third city in size and population in Scotland. Under this name we include New Aberdeen and Old Aberdeen; the latter a city in the strict sense of the term, from its having been the seat of a bishop, and the former, though only a royal burgh, being generally described as a city, owing to its population and opulence. They are bounded by the river Dee on the south, and by the Don on the north; New Aberdeen lying on the north side of the Dee, and Old Aberdeen on the south side of the Don. The lat. of Aberdeen is 57° 8′ 57″. 8 N.; and the lon. 2° 5′ 40″. 7 W.; the distance from Edinburgh by the nearest route, through Fife and Dundee, is about 109 miles. The town is entered from the south by a bridge of seven arches built across the Dee. This bridge, the building of which was commenced by bishop Elphinstone, was finished by bishop Dunbar in 1527. It is reckoned one of the finest bridges in the kingdom; and a proposal is just now before the town council, to lay out a sum between five and six thousand pounds in widening it after a plan which will preserve the old elevation, and all the tablets and shields on the buttresses. The population of Aberdeen, including the whole parish of St Nicholas, by the census of 1831, was 32,912; while that of Old Aberdeen, including the parish of Old Machar, was 25,107, showing an increase of more than 13,000 on the whole population since the census of 1821. The population of Old and New Aberdeen, exclusive of the parishes, in 1841, was 63,288.

*Commerce, Manufactures,* &c.—The commerce and manufactures of Aberdeen are extensive and thriving. It is calculated that about ten thousand individuals are employed in the manufactories in and around the city. The principal articles of manufacture are cotton, linen, worsted, carpetings, canvas, thread and paper. Several large iron foundries have been established here, and shipbuilding is carried on to a great extent. The salmon-fishing is prosecuted in the bay, and in the rivers Dee and Don. In the year 1836, the herring-fishery, which promises to be a source of wealth to the city, was commenced at Aberdeen. In order to encourage the trade, bounties were given by the magistrates, and the harbour trustees exempted the boats from the payment of shore-dues. The fishing is now considered to be established. The principal importations of Aberdeen are wheat and flour, timber, flax, cotton, lime and coals; while the chief exports are oats, manufactured cotton, wool and flax, granite-stone from the neighbouring quarries, cattle, fresh salmon and white fish. Part of the present tide harbour of Aberdeen is about to be converted into a wet dock, according to a plan laid down by Mr James Walker, civil engineer, the execution of which, it is calculated, will cost £85,800. The dock will be capable of containing 240 vessels of 300 tons burthen. The scheme has met with the general approbation of the shipowners, merchants and manufacturers of Aberdeen. From the harbour there is a canal, completed in 1807, which runs north-west to Inverury, a distance of more than eighteen miles. On the Girdleness, a little to the south of the entrance to the harbour, is a light-house, which was first lighted up in 1833. The shipping of Aberdeen has increased of late years. The number of vessels now belonging to the port is 185, of which ten are steamers; the tonnage of these vessels is 31,063; the tonnage of the steamers being 4479 tons. Three of these steamers sail between Aberdeen and London; one of them sails between Aberdeen and Hull; while there are five on the passage between Aberdeen and Leith. Regular conveyance by steamers is also kept up between Aberdeen and Cromarty and Inverness, and Caithness, Orkney and Shetland. Besides the trading vessels which we have enumerated, there are two tug steamers employed in drawing vessels into the harbour. Amongst other contemplated improvements in the city, it may be mentioned that a joint stock company has been set on foot for the purpose of opening up a new and improved access from the harbour to the centre of the town. Along with this scheme, the company contemplate the erection of a great central public market on the west side of the New Street.

*Municipal Government,* &c.—The municipal affairs of Aberdeen are under the management of a Provost, four Bailies, a dean of guild, a treasurer and twelve councillors. The municipal incorporation of Old Aberdeen consists of the same number of members, but has no dean of guild. In both cities there are seven incorporated trades. The harbour works are managed by a board of trustees,

consisting of the town council, five trustees elected by the burgesses, and one by the incorporated trades. The watching, cleaning and lighting of the town, are under the control of a board of commissioners of which the Provost, the dean of guild, the city treasurer and the convener of the incorporated trades are *ex-officio* members, and other eighteen commissioners are elected by the rate payers. Aberdeen is better supplied with excellent water than any large city in Scotland. The act of parliament for raising the assessment for supplying the town with water from the Dee was passed in 1829, and has conferred immense benefit on the population.

*Charitable Institutions.*—Among the benevolent and charitable institutions of Aberdeen may be mentioned in the first place, Robert Gordon's hospital in which a hundred and thirty-eight boys are at present maintained and educated, their instruction embracing, besides the more ordinary branches, French, drawing and music. The building itself is one of the most ornamental in Aberdeen. Another hospital, on a less extensive scale, educates fifty boys; and the girls' hospital now contains forty inmates. A new hospital for girls has also just been erected and endowed at the west side of the town by a benevolent lady. A house of refuge was established here in 1836. The new lunatic asylum was built in 1819, in a beautiful and retired situation at a little distance from the town. The new infirmary is just completed and is a very fine structure. In connexion with it there is a general dispensary for furnishing medicines to the poor gratis; and there is another similar institution in a populous district of the town, and two others in the parish of Old Machar. The benevolent institutions and associations in Aberdeen are indeed so numerous that we have not space even to notice their names. Besides those which we have already mentioned, there is an institution for the education of the deaf and dumb, and there is soon to be an hospital for the relief of the blind, to be built and endowed from funds bequeathed several years ago, by a Miss Cruickshank. A public soup kitchen has for many years been opened for the benefit of the poor in seasons of distress, and a building to be permanently used for this purpose has just been completed. There are besides a clothing society, a society for educating the children of the poor, and a number of other lesser charitable associations, all managed with the greatest economy and prudence. Measures are now in progress for establishing an hospital for orphans, from funds left for this purpose by Mr Shaw, a merchant in Aberdeen. Old Aberdeen has an hospital for five decayed maiden daughters, and five widows of burgesses. One of these women is appointed governess, the founder of the hospital in his deed of endowment, which is a very curious document, most ungallantly observing that "it is impossible to keep order and regularity among ten women, except one of them have a superiority over the rest." The old town possesses another very ancient institution—the bead house, as it is called—founded in 1531 by bishop Gavin Dunbar, an amiable prelate, distinguished for his munificence and good works. In this hospital, the benevolent founder intended that twelve old men should be maintained, in order that they might say their prayers without molestation. At present twenty-one old men receive annuities of six or seven pounds each from the endowment.

*Churches.*—There are in Aberdeen, including the parishes of St Nicholas and Old Machar thirteen parish churches. Two other churches in connexion with the establishment have recently been erected, and there is besides a chapel for seamen in a convenient situation near the quay, in which service is performed by clergymen of the establishment. The parish church of Old Machar is the nave of the ancient cathedral, and is a magnificent old building. The East and South churches are new buildings, erected on the site of former churches, and are both fine gothic structures. The North church is a capacious building, of a recent date, and of a Grecian kind of architecture. Grey-friars church is the only place of worship now standing in Aberdeen, which once belonged to the Roman Catholics. Besides the churches of the establishment, there are three chapels belonging to the United Associate Synod, one in connexion with the original Seceders, and another with the original Burghers. There are two Scottish Episcopalian chapels, and one Independent chapel, in which the worship is conducted after the forms of the church of England. The Roman Catholics have an elegant chapel here, erected by the present clergyman, Mr Gordon, about the year 1804. There are four congregations of Independents; two Baptist congregations, a Wesleyan Methodist chapel, and one congregation of the Relief church. We have only to add that the society of Friends have a meeting-house here; and that there are besides a congregation of Unitarians, another of Glassites, and another of Irvingites.

*Colleges, Schools,* &c.—Of seminaries of education, Aberdeen has a very fair proportion. It is well known that it is the seat of two universities, an honour of which no other city in Europe can boast. King's college and university in Old Aberdeen, was founded in the year 1500. It is much frequented by students from the northern counties, who are attracted to it by the numerous endowments, called bursaries, which it possesses. Its library is extensive and valuable. Marischal college in New Aberdeen was founded in 1593 by George Earl Marischal. The original buildings are heavy and inelegant; but a splendid new college, after a design by a native architect of eminence, is now erecting in their place. The foundation stone of the new buildings was laid on the 18th of October, 1837, by his Grace the Duke of Richmond. The funds for this erection are a grant from government of £15,000 with accumulated interest of two or three thousand pounds more, and subscriptions which now amount to £7,500, of which the town council gave a subscription of £1000. The senatus of Marischal college consists of a chancellor (the Duke of Richmond) a rector (Lord Brougham) a dean of faculty (Mr Bannerman, M.P.) a principal, and nine professors. The sessions, both at King's college and Marischal college, commence in the beginning of November, and close at the end of March. The grammar school of Aberdeen contains five classes, the two highest of which are taught by the rector. Formerly Latin was the only study in this seminary, but the present rector, Dr Melvin, in the year 1826 commenced giving instruction in the elements of Greek, and in the year 1835, the masters, on the recommendation of the town council, the patrons of the school, introduced history, geography and arithmetic into the curriculum. All the classes at this school are well attended. There are also, under the charge of the magistrates, two English schools, a writing school and a mathematical school, besides a large seminary for educating four hundred boys and girls,

erected from funds bequeathed by Dr Bell of Madras. In Old Aberdeen there is also a school on Dr Bell's system, under the patronage of the council there. Besides these, there are several schools in connexion with the parish churches and a number of seminaries conducted by private teachers. The incorporated trades have a school for the children of their freemen. The Roman Catholics have a large and elegant school, the building of which was finished in 1833. As several of the schools under the patronage of the magistrates are not considered to be sufficiently commodious and elegant, an attempt was made, in the year 1836, by the town council, to procure an act of parliament for appropriating the existing surplus of a fund which had been left by a Sir Alexander Hay in the year 1605 for the maintenance of the ancient bridge of Don, (a structure erected in the thirteenth or fourteenth century) and applying it to the building of new and enlarged schools in Aberdeen. This scheme was strongly opposed by those who thought that in no case can mortified funds be diverted from the original purpose of the donor; and the bill, notwithstanding the greatest exertions in its favour on the part of provost James Blaikie, then chief magistrate, and Mr Bannerman, the representative for the city, was eventually lost, having been twice thrown out in a committee of the House of Commons. It may be stated here that the fund left by Sir Alexander Hay, had, by profitable investment and prudent management on the part of the magistrates, increased so much beyond what was required for fulfilling the intention of the donor—the upholding of the ancient bridge—that from the surplus, a new and elegant granite bridge, with five arches, was erected over the Don to the east of the old bridge in the year 1829.

*Literary Societies.*—Though the inhabitants of Aberdeen do not yield to those of any other town in Britain in learning, there are not many literary or scientific associations here. A mechanics' institution has been established since the year 1824. It has a library consisting chiefly of scientific works, and lectures on science and literature are delivered to the members during the winter half of the year. The artists' society, of which the Earl of Aberdeen is patron, was established in 1827. We do not know we are justified in reckoning as a scientific institution, a phrenological society, which has existed since the year 1836, and is possessed of a library and a collection of casts; but of its proceedings little is known to the uninitiated, owing to the peculiarly unobtrusive manner in which it pursues its labours. We may here add that there are three weekly newspapers in Aberdeen, the *Journal*, the *Herald*, and the *Constitutional*, all of which are conducted with considerable ability. The Journal, which was commenced in 1748, is the oldest newspaper north of the Forth, and has a very large circulation. Its principles are moderately conservative. The Herald is a whig paper, and the Constitutional is conservative, and especially devoted to the defence of the church.

*Public Buildings.*—Amongst the principal public buildings in Aberdeen, besides those to which we have alluded in speaking of the institutions and churches, are—the county rooms in Union Street, founded in 1820; the surgeons' hall in King Street, and the advocates' hall, which is just completed, in Union Street. The barracks are erected on the Castle Hill, a fine airy situation on the east side of the town. There is a military hospital on the Heading Hill, the ancient place of execution, which is separated from the Castle Hill by a street running in the hollow, and over which an elegant cast iron bridge is about to be erected. The tolbooth in Castle Street is an ancient building the front of which was rebuilt of granite in the year 1820. It has on one side the town house, the appearance of which is disfigured by the shops which occupy the ground floor, and on the other the new inn, which it is proposed to take down, for the purpose of erecting a splendid building for the North of Scotland bank and the North of Scotland insurance office. The cross in Castle Street is a curious old building of a hexagonal form. It was erected in place of a more ancient cross in the year 1686, but has since been altered for the worse, and it is just now profaned by being used as a coach office. Around the upper part are busts in alto relievo of the royal family of Stuart. The court house, at the back of the tolbooth, was finished in 1820, and the new jail which adjoins it, in 1831. The bridewell is a very large building, situated on the west side of the town, near the entrance by Union Street. In the line of Union Street, a splendid granite bridge of a single arch of 130 feet span, is thrown over a large hollow, through which the Denburn—and not the river Dee, as some English writers ignorantly suppose—runs into the harbour. The athenæum or public reading-room is situated at the east end of Castle Street. The theatre in Marischal Street, which was finished and opened in 1795, is a neat building, though not so large as might be expected, considering the size of the city. The Aberdeen bank is a handsome building at the head of Marischal Street. Aberdeen, besides branch banks, possesses three native banks, the oldest of which is the Aberdeen bank, established in 1767. There are two native insurance companies, both of which are understood to be in a flourishing condition. The principal inns in Aberdeen, are the Royal hotel, the Union hotel, and the Aberdeen hotel, all in Union Street, and the new inn in Castle Street. There are just now seventeen coaches which start daily from Aberdeen to Edinburgh, Inverness and other stations.

Having briefly noticed the statistics of Aberdeen, we may add, that its antiquity is not disputed by those who are not satisfied that its identity with the Devanha of the Romans has been made out. The students from the Highlands who flock to King's college, are unanimously agreed that the word Aberdeen is Gaelic, which is the derivation that might be expected from them; but from some very ancient forms in which the word has appeared, there is reason to doubt the correctness of this Celtic etymology. With regard to the charter said to have been granted to Aberdeen by king Gregory, antiquaries are much disposed to disbelieve that either it, or the monarch who gets the credit of bestowing it, ever existed. The first authentic notices of Aberdeen begin about the year 1154, when king David I. removed the see of the bishop of Mortlach to this city. About the year 1178 or 1179, Aberdeen received a charter—in all probability its first—from king William the lion, who had a particular favour for this city. Subsequent charters from the Scottish monarchs confirmed and extended its privileges; in 1365, it was ranked as the second city in Scotland in the parliamentary roll; it was frequently visited by the kings of Scotland, and has at all times been distinguished for its loyalty. It is now one of the most flourishing cities in Great Britain.

ABERGAVENNY; a town in Monmouthshire, Wales, seated on the confluence of the rivers Usk and Gavenny, 142 miles west from London, and 14 south-west from Monmouth. The Derry, one of the hills which sustain the pyramidal hill called the Sugar Loaf, rises above the town, which is built in an irregular manner, but is pleasantly interspersed with trees. On an eminence near the south end are the ruins of the castle, which was founded soon after the Conquest, by Hameline de Balun, or Baladon, one of whose descendants founded here a priory for Benedictine monks, of which some vestiges also exist. The church, dedicated to St Mary, recently rebuilt, is a spacious structure in the Norman style of architecture, and contains several very ancient monuments. Its choir remains in its original state, with rudely carved oaken stalls. The Baptists, Independents, Wesleyan Methodists, and Roman Catholics, have each chapels here.

The principal trade of this place is in wool. In the vicinity are numerous iron works. Abergavenny is the thoroughfare from the west of Wales to Bath, Bristol, and Gloucestershire; and the Monmouthshire and Brecon canal, which passes within a mile of the town, adds greatly to its facilities for trade. Abergavenny castle confers the title of earl on the family of Neville. Within half a mile of the town are the remains of a Roman camp; and at Lloyndhu is a mineral spring, said to be of service in scorbutic complaints. Population of the town in 1831, 4230; in 1841, 4953.

ABINGDON; a market-town in Berkshire, England, situated at the influx of the Ock into the Thames, 55½ miles W. N. W. from London. It consists of several well-built streets, which terminate in a spacious area, in which the market is held; and in the centre of this area is the market-house, a handsome structure of curious workmanship, with a large hall above, in which the summer assizes are held, and other public business done. The most considerable manufactures of the town are canvass, sacking, and sail-cloth. The principal trade is that of malting. Market-days, Monday for corn, and Friday for articles of general consumption. There are two parish churches, and several chapels for dissenters; also several hospitals and alms-houses, and a free grammar-school, founded in 1563, by John Royse, for the education of 63 boys. Before the reform-bill Abingdon returned one member to parliament, and it still retains that privilege. Population in 1801, 4356; in 1831, 5259; in 1841, 5585.

ABSENTEEISM. The effect of the non-residence of landholders upon their estates, or, as it is comprehensively styled in one word, *absenteeism*, is a question upon which there has been some difference of opinion among economists. Mr M'Culloch, on his examination before a committee of the House of Commons, declared that it is of no consequence to the inhabitants of a particular country, as, for instance, Ireland, whether the landholders spend their incomes at home or abroad. When asked whether "the population of a country would not be benefited by the expenditure at home of a certain portion of the rent, which if the landholder were an absentee, would be expended abroad," he replied; "No, I do not see how it would be benefited in the least. If you have a certain value laid out against Irish commodities in the one case, you will have a certain value laid out against them in the other. The cattle raised by the landholder are either exported to England or they stay at home. If they are exported, the landlord will obtain an equivalent for them in English commodities; if they are not, he will obtain an equivalent for them in Irish commodities; so that in both cases the landlord lives on the cattle, or on the value of the cattle, and whether he lives in Ireland or in England, there is obviously just the very same amount of commodities for the people of Ireland to subsist upon."

The fallacy of this argument is so apparent, that it has been almost universally rejected in England. It is, indeed, too plain to admit of question, that if the products imported from Ireland in payment of the rent of absentee landholders reward the labour of a hundred thousand English workmen, they would,—had they been consumed at home,—have afforded employment to a hundred thousand Irishmen, who could not otherwise have obtained it, and have conferred an economical benefit equal to the profits of their labour, upon Ireland. The non-residence of the Irish proprietors compels the Irish labourers to emigrate in swarms to England, to find the employment which they cannot obtain at home.

Mr Senior rejects the doctrine of M'Culloch, as stated by himself, but admits it with a qualification. When the non-resident proprietor receives his income in agricultural produce, his absence is a disadvantage, but when he receives it in manufactures the case is otherwise. If an English landholder resides in France, and his rents are remitted to him in British manufactures, his income, says Mr Senior, though finally spent abroad, is nevertheless first spent at home, and the only effect of his non-residence is that he gives employment to one description of workmen instead of another. It is obvious, however, that this distinction is wholly futile, and that it makes no difference whatever to the community, in what form the income of an absent proprietor is remitted to him. If it be more advantageous to him to receive it in manufactured articles than in agricultural produce or specie, it must be because there is a profitable trade carried on in such articles between the country where he resides and that in which his estates are situated. This trade employs of course a certain amount of capital, and the investment in it of an additional amount for the purpose of making remittances, would only displace an equal amount that had been invested before. The effect would be, not as Mr Senior supposes, to employ one set of workmen instead of another, but to throw out of employment one set of workmen instead of another; and the general result,—as far as the community is affected,—would be in both cases precisely the same.

ABSORPTION. All bodies, fluid and solid, possess the property of absorbing gases and vapours into their pores, without changing their state of aggregation, and without forming with them true chemical compounds. In the case of solids, the extent of the absorption and the rapidity with which it takes place, are modified by the dryness and porosity of the substance, by the atmospheric pressure and temperature, as well as by the nature of the gas or vapour. The more dense a piece of charcoal is, or the smaller its pores, the greater are its absorbent powers; this is true at least to a certain extent. A piece of box-wood charcoal has been found, by experiment, to absorb within its pores,

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| Ammoniacal gas | 90 times its volume. |
| Muriatic acid gas | 85 .. |
| Sulphurous acid gas | 65 .. |
| Carbonic acid gas | 35 .. |
| Oxygen gas | 9½ .. |
| Nitrogen gas | 7 .. |
| Hydrogen gas | 1¾ .. |

It is to be remarked that the gases which are absorbed by charcoal in greatest abundance, are those most easily reduced to the liquid state by cold and pressure. For vapours, which differ from gases only in respect of ease of liquefaction, are taken up by charcoal and other porous bodies with the greatest readiness. The power which charcoal has long been known to possess, of absorbing odours, is accounted for by its possessing in an eminent degree the property of condensing in its pores, vapours and gases. It renders sulphur waters, for example, sweet, by absorbing the sulphurated hydrogen gas to which these waters are indebted for their odour.

A circumstance of great importance, as connected with the manufacture of charcoal and gunpowder, is intimately connected with the present subject. Charcoal permitted to lie together in quantity, is observed to become hot, and if left to itself, to take fire. Many serious fires and accidents have arisen from this cause. The most probable explanation is, that the charcoal condenses within its pores, atmospheric air, by which process much heat is developed, which accumulates, by virtue of the non-conducting powers of charcoal for heat, to such an extent as to set the mass on fire. Platinum sponge, or platinum in a finely divided state, possesses extraordinary powers of absorbing gases, particularly oxygen. If the platinum sponge has been purified by long boiling with water, and dried in vacuo over sulphuric acid, and then brought into the air, it absorbs the oxygen of the air with so great rapidity, and so much heat is evolved, as to make the mass red-hot. Spongy platinum well prepared can absorb 700 times its volume of oxygen. Liquids likewise absorb gases in a manner analogous to the above cases of absorption by solids. The volume of water at 64° Fahr. dissolves

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| Carbonic acid gas | 1·06 | times its volume. |
| Oxygen gas | 0·065 | .. |
| Nitrogen gas | 0·042 | .. |
| Atmospheric air | 0·050 | .. |

In the atmospheric air dissolved by water, the relative proportions of its ingredients are different from the proportions in atmospheric air itself; there is more of oxygen.

The phenomena of the absorption of gases and vapours are generally referred for explanation to a power in bodies analogous to capillary attraction, and the gases are supposed to be condensed on the surfaces lining the pores. The idea of a chemical affinity acting in these cases cannot be admitted; the gas is not intimately united with the minutest particles of the body in a chemical manner, but has merely attached itself mechanically, in a way it must be confessed as yet peculiar to these cases, to the extensive surface afforded by the state of porosity. The density of the gas in this state must be very great; in the case of oxygen gas, condensed by platinum sponge, for instance, the oxygen must exist therein in a state approaching, if not amounting to, the solid state.

ACIDIMETRY means the testing of acids with reference to their strength and purity. This is a process of great importance in the chemical arts, and is especially applied to the three mineral acids, sulphuric, muriatic and nitric. The specific gravity of these acids is greater than that of water, and the rate of increase of specific gravity is in their case a precise indication of a corresponding increase in the content in real acid, and tables have been constructed which give at once the content in real acid at different specific gravities. The instrument in use by the manufacturers, is a glass hydrometer. The sulphuric acid, or oil of vitriol of commerce, should have a specific gravity of 1·85, or mark 170 on Twaddel's hydrometer. (See *Hydrometer* supplement.) The greatest specific gravity of the muriatic acid, or spirit of salt of commerce, is 1·20, or 40 on Twaddel's instrument; it is more generally sold at 36 on Twaddel, or 1·18 specific gravity. Nitric acid or aqua fortis can be had of specific gravity 1·54, or 108 on Twaddel; but single aqua fortis in commerce stands only 70 on Twaddel. Another and more correct mode of estimating the real content in acid of the commercial articles, is by means of alkalies of known strength or by means of calcareous spar in the case of the muriatic and nitric acids. The larger the quantity of alkali any acid can neutralise, the greater is its amount of real acid; and the greater the amount of calcareous spar, or carbonate of lime, dissolved, the stronger the acid subjected to the test. The alkali used is ammonia or carbonate of soda, and the means of ascertaining the precise limit of neutrality is litmus or turmeric paper. The specific gravity of acetic acid does not afford a sure criterion of its strength, and recourse must be had to the more rigid chemical tests.

The sulphuric acid of commerce generally contains a minute quantity of nitrous acid, a substance which is exceedingly hurtful in many operations in dyeing, but most particularly in the dissolving of indigo. The presence of the nitrous acid in sulphuric acid is tested by pouring upon the latter in a tube a solution of copperas or sulphate of iron. The impurity is detected by the two striking together a deep red colour after the lapse of a second or two. The muriatic acid of commerce is tested for its content in sulphuric acid, by a solution of muriate of barytes; a white precipitate is the indication of the impurity. Muriatic acid may further contain sulphurous acid; which is detected by adding to the suspected acid some protochloride of tin, generally called crystals of tin, and then diluting with water; there is a brown residuum if the acid tested contained sulphurous acid. The nitric acid of commerce is tested for sulphuric acid in the same way as muriatic acid; and for muriatic acid by a solution of nitrate of silver.

ACUPUNCTURE, (*a*) is a medico chirurgical operation which was introduced into Europe more than a century ago, and has for time immemorial been practised in China and Japan. It consists in introducing one or more needles of a particular size and shape, into any diseased part, especially where there is swelling and pain. It has been employed in chronic rheumatisms, and muscular and neuralgic rheumatism, unaccompanied by heat, in sciatica, lumbago, nervous and convulsive affections, sprains, contusions, uterine pains, hiccup, and hysterics. In all cases where a watery fluid is lodged under the cutis, or among the cellular substance, or the fascia of the outer layer of muscles, acupuncture may be employed with advantage.

There is a species of acupuncture in which the operation is associated with galvanism and electricity, under the name of the electro, or galvanic puncture, which has in some cases been attended with good effects.

It is about seventeen years since this practice was revived; but notwithstanding its acknowledged good effects in numerous cases, it is now again on the wane, and quickly sinking into that obscurity, in which for more than a century it formerly re-

posed. Acupuncture has been employed to a considerable extent, and with a good share of success, in the Meath Hospital, Dublin, under the direction of Drs Graves and Stokes. We shall quote a case of sciatica treated on this plan, by the direction of the former of these physicians.

"One of the most commonly employed agents," says Dr Graves, "in the treatment of chronic sciatica, is acupuncture, and of this it is necessary to say something, as there are many and decided proofs of its efficacy, in giving not only temporary, but also permanent relief. Persons who have received benefit from acupuncture, have been always noticed to labour under the affection in the chronic stage; few, if any, having derived any advantage from it when their symptoms were acute, and when there was severe pain and tenderness along the course of the nerves. You are not, however, to be deterred from employing it in chronic cases by the existence of tenderness along the course of the nerves; and you should impress on your minds that it is in all cases deserving of trial, where the disease has been of considerable duration. A common sewing needle, heated red-hot, and allowed to cool gradually, with a head of sealing wax, will answer the purpose much better than the needles which are sold, and called acupuncture needles." "The reason of heating the needle," says Dr Stokes, "is to take the temper out of the needles, by holding them in a candle, and then letting them cool gradually. The next thing is to place a head, which will remain firm on the needle, and for this purpose you place a small portion of thread through the eye, and then cover it with a bit of melted sealing wax. Having thus formed the head, you sharpen its point and polish it by the emery pincushion, and the sharper it is the better."

"I remember a case of chronic sciatica," observes Dr Graves, "which came under my notice several years ago; the patient was very much reduced; he was quite lame and greatly weakened; he had been through France, and remained at Barege for a considerable time, without any benefit; his sufferings were very great, and broke down his constitution considerably. On his return to this country, he consulted me, and I advised the application of the needles. After the third application the pain was removed, the lameness also rapidly diminished, and in the space of a fortnight he was quite well, and what is very remarkable, continues so ever since." So happy a result as this is, however, seldom met with. Chronic cases of sciatica, in general, give a great deal of trouble, and frequently disappoint the best directed efforts of medical skill.

Respecting the use of the electro or galvanic puncturation in a case of paralysis, "it has lately been proposed," says Dr S. "to employ the stimulus of electricity and galvanism in a different way, by transmitting it directly to the muscles of the affected limbs, by means of needles, which are to be inserted into different parts of paralysed extremities, and which are intended to act as conductors for transmitting the galvanic influence. This has been termed the electro or galvanic puncturation, and forms an excellent mode of applying the stimulus of galvanism. The mode of preparing the needles has been already described, and there is nothing more simple than to introduce them.

"Placing the point of the needle perpendicularly on the part, you press it downwards in a slanting direction, using, at the same time, a rotatory motion, and thus easily pass it in. When you have pierced the skin and fascia there is no difficulty in introducing it into the muscular fibres. The distance between the needles must be regulated according to circumstances. You then proceed to send the galvinic fluid to the part, and for this purpose the best mode is to employ a small galvanic battery, with a limited number of plates. If you have plates of from one to two or three square inches, you will find that from fifteen to twenty of these in a state of ordinary action, will be quite sufficient, particularly in the commencement of the treatment. It is a curious fact that the intensity of the shock is increased to an extraordinary degree, by means of the needles. A battery which, in the usual manner, would not communicate any shock, will, when used with the needles, give a violent one, and communicate such a stimulus to the nerves as will throw the whole limb into violent spasms, and cause a copious perspiration to break out over the body. I have seen (continues Dr Stokes), very good effects from a feeble battery in this way, and it would appear, that this is the result of the direct transmission of the galvanic influence to the muscular fibres. In most cases a perspiration is brought on, the limb convulsed, and sometimes the whole body is thrown into spasms."

Dr Elliston of the London University, who has devoted a considerable share of attention to this branch of therapeutics, prefers the following mode of performing the operation. "The spot being selected, usually the seat of the pain, or when any circumstances forbid this, the adjacent parts, the operator having stretched the skin with the fore and middle fingers of the left hand, pierces it perpendicularly with a gentle pressure, and the body of the needle is advanced by means of a semi-rotatory motion, in opposite directions, till it has penetrated to the required depth, and this is repeated till the desired number is introduced. Their withdrawal is sometimes effected by means of a forceps, but it will be better to withdraw them by the same motion with which they were introduced, as the skin is painfully elevated by their direct and forcible retraction: possibly also, by the latter mode, the point of the needle might be broken off if it were not well tempered. The withdrawal of the needles is not followed by hæmorrhage; but sometimes a single drop of blood oozes from the puncture. In penetrating, the needle often meets with variable degrees of resistance, according to the nature of the parts through which it passes. The Japanese and Chinese allow the needles to remain only while the patient makes thirty respirations. M. Cloquet states, that he derived the most marked benefit in cases where he caused them to be kept in several days, and this accords with our own experience. It is true, the pain may cease instantaneously on the introduction of the first needle, but we observe this by far more frequently after the needles have been in some time: indeed, so satisfied are we on this point, that we prefer a single needle remaining for some time in the part to several introduced and withdrawn speedily. But there is yet no general rule as to the time which the needles ought to be allowed to remain."

Chronic rheumatism is one of those complaints in which acupuncture is perhaps most frequently successful, and it appears that, in proportion to the length of time the rheumatic affection has existed, should be the length of time in which the needles remain in the part.

There is another class of cases in which the ope-

ration of acupuncture might be employed by any intelligent person, or even by the patient, and these are anasarcous, or watery swelling of the legs, and of the parts of generation in the male, where, from a variety of causes, these tender parts are often distended to an immense size with a clear watery fluid. In either of these cases a few punctures with a common needle often reduce the swelling, and very materially assist the other means employed in the case.

Before concluding this article we again recur to the subject of galvanic puncturation, and its effects in paralysis.

"With respect to our experience of the value of this mode of employing electricity (observes Dr Stokes), I have to remark, that if galvanism or electricity can be of any use to paralysed limbs, this is one of the best modes in which it can be applied. The apparatus is simple, can be prepared in a moment, and does not depend on the state of the weather, like the ordinary electrical machines. There is another advantage also, it is not so likely to excite alarm in the mind of the patient. We have employed it in several rheumatic and paralytic cases in the Meath hospital, but have not as yet been able to say, that decided benefit has accrued from it to the *majority* of the patients on whom it has been tried. This is more particularly true with respect to paralytic patients; in the rheumatic cases we have found it more beneficial. We have had, however, distinct and unequivocal proofs of its value in one case of paralysis of the muscles of the face, which had all the characters of that described as resulting from an affection of the seventh pair of nerves. This patient had been for a long time labouring under an affection of one side of his face, and had used a variety of remedies. Those principally employed were stimulating liniments, and the internal use of strychnine, from which he derived some slight benefit, but the application of the galvanic fluid in the way I have mentioned, was followed by decided and rapid improvement. Indeed from the time it was first applied, the patient recovered rapidly, so that in a very short time all the deformity of face disappeared."

From these facts and circumstances, and many others that might be adduced, we should be sorry to see the very ancient operation of acupuncture entirely thrown aside, because it fails in many cases, and does not cure every disease for which it has been prescribed. The modus operandi of acupuncture, it is difficult, nay, perhaps impossible, satisfactorily to explain, and it will yet require much close observation and attention to those cases in which it is employed to arrive at even anything like an approach to truth on the subject. This is indeed a matter of very little consequence to the patient, so that under its application the disease has been removed, but to the professional man, and indeed to every inquiring mind, it is always matter of deep regret that darkness should envelope the *rationale* of a process by which so much good is effected, and that we should still be shut up to act in so very many cases on empirical principles. "The effects of acupuncture," says Dr Elliotson, "are not deduceable from counter stimulation, for they are sometimes most remarkable when such stimulation has been scarcely felt; not from electrical agency, for they are equally produced when the needles employed are of gold or silver; nor from moral agency, for they who derive the curative influence of the needles, are as much benefitted by their application, provided their cases be suitable, as those who have the most unlimited confidence in their efficacy; the reasoning and incredulous European being, in this respect, on a level with the all-believing and unlettered Chinese. And yet these effects are not only beyond all dispute, but, in many instances, are so prompt, so marked by cessation of pain, as to impress the vulgar mind with the idea of supernatural agency. The differences of opinion respecting the value of acupuncture, are the very opposites of each other, and are entertained by two classes of practitioners—the one indifferent, deeming its importance so problematical, so improbable, that investigation of its merits would be a waste of time—the other enthusiastic, being satisfied, from observation and experience, that many owe their deliverance from pain to the prolonged or frequent application of the needles, who had sought relief in vain from the adoption and long perseverance in the use of other means. For our own part, fully convinced of its importance in therapeutics, we should merely recommend, that greater attention be bestowed in observing the cases in which it is found beneficial, in order to enable us to point out with greater precision those in which it is suitable."

AERATED WATERS, a term popularly applied to a variety of acidulous and alkaline beverages, more or less impregnated with fixed air or carbonic acid gas. Water absorbs under the natural pressure of the atmosphere, about its own bulk or volume of carbonic acid gas. If a pressure be applied equal to two atmospheres, the water will absorb double its own volume, its absorbing power increasing as the pressure. Water thus impregnated acquires a pleasant acid taste, to which is usually added a small quantity of potash or soda, and such flavouring or other ingredients as may be required to imitate the natural mineral waters. The manufacture of these liquids has of late years become of considerable extent, owing to their agreeable as as well as medicinal qualities.

AFRICA (*a*). The discovery by Lander of the termination of the Niger in the bay of Benin has opened up a broad and rich territory to commercial enterprise. The resources and the necessities of this extensive district of Africa are equally inviting, and it is presumed that a thriving traffic will speedily be established with it. On Lander's return to England, after the death of his master, Clapperton, the intelligence and enterprise which he had shown recommended him to government as a fit person to complete the discoveries which had been begun by Clapperton and his companions. Lander, accordingly, went out with his brother, and landed in the Bay of Benin (1828). The account of their journey is most interesting: The two brothers, who had been equipped by the government, and furnished with small presents to the native chiefs and princes, were in general well received by all ranks, and were able at last to accomplish the objects for which so many expeditions had been undertaken, and so many travellers had died.

They reached Boussa, a large city on the Niger, and the capital of a considerable kingdom. At this place there occurs a series of interruptions in the bed of the river, which, from some cause not explained, is said to be contracted in one spot to a very small breadth, without increasing either in depth or velocity—a strange phenomenon, if correctly observed. The travellers from Boussa sailed up the stream, for a considerable distance, through a line of navigation broken by shallows and rapids,

but amid a country everywhere fertile and beautifully cultivated. They then returned to Boussa, and engaged canoes to take them downwards to the sea. In this important part of their voyage they encountered much danger, both from stormy weather and from the violence and treachery of some of the slave-dealing Africans whom they encountered on the lower part of the river. Their voyage was mostly through a rich and populous country; and they at last reached the salt water, and saw the Niger enter the sea by a numher of mouths in the Bay of Benin. These had been long known to European seamen, but were by them imagined to be separate rivers, leading to different parts of the country; and it was only Reichard, Macqueen, and a few who had been convinced by their arguments, who conjectured that they united at a short distance inland to form the large stream of the Niger.

In descending the river, the Landers made a second discovery, hardly inferior in importance to that which was the principal object of their voyage. It had been conjectured hy Macqueen, Bowditch, and others, on the evidence of native merchants and the Arabian geographers, that at some point on its lower course the Niger was joined from the east hy a stream not much less than itself in size, and which would, of course, open up a channel for ships and trade, as far to the eastward in Africa as the Niger itself reaches to the west. This river had heen heard of hy Browne, who penetrated into one of these eastern districts called Darfoor, and that traveller even names some of the trihes who live on its banks: a stream corresponding to the same localities had also been mentioned to Major Denham, one of the gentlemen who accompanied Clapperton on his first expedition. The existence of the eastern river had therefore heen ascertained;* hut the Landers now passed its mouth, and actually saw it discharge its waters into the Niger; its magnitude corresponded entirely with the report which had been received concerning it, and they mention the name of the same tribe (Yem-Yems) living on its hanks, who had been heard of by Browne on the confines of Ahyssinia. The fact, therefore, which had heen reported from the earliest periods, that there was a communication by water in the interior of Africa from one extremity of the continent to the other, appears to be completely verified. By means of the Niger on the western part, and the Tchadda on the east, there can be no difficulty in passing hy boats, from the vicinity of the Egyptian Nile, to the sources of the Senegal—an inland navigation of 40 degrees, or nearly 3000 miles in a straight line. This is an advantage enjoyed by Africa, analogous to that which the rivers Ohio and Missouri, stretching in opposite directions for almost the same extent, and meeting in the Mississippi, offer to central America. The Niger, however, is in one place, broken by rapids and shallows, which injure its navigation for about 100 miles; and the Tchadda may have some similar impediments, though, from the level on which it flows, they are likely to he less considerahle.

There is another interesting circumstance connected with the Tchadda. Clapperton and Denham, in their first journey, saw a large fresh-water lake in the interior (called the Tchad), which received the waters of two or three considerable rivers. They heard of no outlet by which this lake communicated with the sea; but it is well known that all inland lakes which are *without an outlet* have their waters salt or brackish: the Dead Sea, the lakes Aral, Van, Urumea, Baktegan, Zaweh, are examples of this fact, and others might be named, not one instance being known to the contrary. It seems unavoidable, therefore, that this African lake, "*whose water*," says Major Denham, "*is sweet and pleasant*," should also have an outlet to the sea; and as the river Tchadda, in the lower part of its course, is only separated from its basin by a single chain of mountains, and there is no other large stream in its vicinity, the probability is that this river communicates with the lake. Other facts have heen mentioned by African geographers which lead to the same conclusion. The bed of the lake is supposed to be about 1000 feet above the level of the sea, which, considering that the course of the river must be above 1500 miles, affords ground to suppose that the current is not broken by rapids, and may be navigable to its head waters. The facts at present known, therefore, favour the conclusion, that navigation may he practicable from the sea to this interior lake, on which the populous states of Bornou, Loggun, &c., are situated. Should this be really the case, the consequences would he of more importance than it is at present possible to anticipate.

The countries to which access has already been gained are sufficiently described in the travels of the Landers, and of Clapperton and Denham, to enable us to judge of their capabilities for commerce. They were previously as little known in Europe as America was before the time of Columbus, and their discovery lays open to enterprise and to observation a field as new as did that of Mexico and Peru. Their civilization is sufficiently far advanced to make commerce an object of importance with them, and property is as secure as in any part of India not directly under the government of Britain. The Landers saw large cities, in which there were regular fairs, and numerous commodities, such as cloths, fine mats for carpeting (a general luxury in warm countries), iron utensils of different kinds, grain, vegetahles, nuts and fruits, dye stuffs, muskets, and slaves. In one place they heard the hum of voices on a market day, two miles before they approached the city where it was held. As a proof of the security of property, and the undisturbed peace of some districts, they saw large herds of cattle grazing in the fields under the care of children. They sent out their servant with valuable European goods for sale in the villages, and had no fears except for his own honesty. They saw, in one place, long trains of women going to market, with baskets on their heads filled with vegetahles, &c.; and, in others, lines of pack-horses were observed, arriving from remote districts with produce for sale. It is not asserted that the country is in a high state of civilization, or that it is governed by written laws: on the contrary, the governors are frequently changed and assassinated; hut the people, in the meantime, take little interest in such matters. They are at peace, they cultivate the soil, and they have many commodities which they would gladly dispose of for the new luxuries which Europeans can afford them. They produce indigo, palm oil, rice, gums and dye stuffs, hides, and the

* This river is mentioned under various names, being called sometimes the Tchadda, sometimes the Quarra and at others the Quella and Querra. All these are merely different ways of pronouncing the same word: Tchadda, and Quadda, or Quarra, passing into one another, like our *church, kirk; birch, birk*, &c. Quadda, Quarra, Quolla, are too like each other to be mistaken. The word Quadda, Quadd, or Tchad, is applied to all rivers and lakes in Africa, and seems to mean simply "*water*."

skins of wild animals, while their country is perfectly fitted for the cultivation of sugar, cotton, tobacco, cocoa, pepper, and all the other staples of tropical countries. Were the people savages, or tribes addicted to war, or were they even the subjects of any wide-spread despotism, which, in its caprice, might declare against all intercourse with foreigners, in such cases all these advantages would be thrown away. But they are a quiet, inoffensive, and even industrious race, resembling, in many respects, the inhabitants of the plains and river countries of India. The commerce of England may, therefore, derive the very highest advantages from the communications now opened with them.

The following estimate of the population of the different parts of Africa, is given in the Weimar Almanac for 1837. Considerable latitude must, of course, be allowed in calculations regarding a quarter of the world so little known.

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|---|---|
| Abyssinia | 4,500,000 |
| Ashantee | 3,000,000 |
| Barca | 300,000 |
| Bornou | 2,000,000 |
| Dar Fur | 200,000 |
| Fellatahs | 2,000,000 |
| Guinea | 7,000 000 |
| Morocco | 8,500,000 |
| Senegambia | 10,000,000 |
| Sennar | 1,500,000 |
| Soudan, Sahara, &c. | 20,000,000 |
| Tripoli | 1,500,000 |
| Tunis | 3,000,000 |
| Interior and Eastern Africa | 29,000,000 |
| *Foreign Possessions.* | |
| British Possessions | 162,000 |
| Danish | 3,000 |
| Dutch | 15,000 |
| French | 1,905,430 |
| Portuguese | 663,000 |
| Spanish | 11,481 |
| Turkish { Egypt | 2,514,000 |
| Turkish { Nubia | 1,185,000 |
| United States | 25,000 |
| Total Population of Africa | 95,284,911 |

AIRDRIE; a market-town in the parish of New Monkland, Lanarkshire, eleven miles east from Glasgow, on the highway to Edinburgh. It is said to owe its origin to a mineral well near the place, which formerly was much frequented, but is now neglected. The water is strongly impregnated with iron and sulphur. Airdrie has risen within these not many years from a small village to a thriving town. It is one of the new parliamentary boroughs, having all the privileges of a royal borough, and along with Lanark, Hamilton, Falkirk, and Linlithgow, sending a member to parliament. The vicinity abounds in iron-stone and coal, which circumstance is the great cause of its prosperity. The iron-works of Carron, Clyde, Calder, Gartsherrie, and Chapel-hall are partly supplied with iron-stone from this quarter, and vast quantities of coal are carried to Glasgow by the Monkland canal and the Garnkirk railway. Coal is also carried by the Ballochnie and Kirkintilloch railways to Kirkintilloch, and thence by the Forth and Clyde canal to Edinburgh. Besides the working of coal and iron, weaving for the manufacturers of Glasgow forms a principal occupation of the inhabitants. A neat town-house, containing prison, police-office, &c., has been lately built in Airdrie. A large cotton-mill, also, has been recently erected in the neighbourhood. The parish-church is situated on an eminence about a mile and a half from the town, but the town itself contains two or three chapels and meeting-houses. In Airdrie there is a circulating library, and also a public reading-room. Population in 1831,6594; in 1841,12,418.

ALABASTER (*a*). Under this name are sometimes confounded two minerals, wholly distinct from each other, gypseous alabaster, or compact gypsum, and calcareous alabaster. *Gypseous alabaster* is found of a white, or yellowish, or greenish colour, semi-transparent, and capable of receiving a polish. Statuaries distinguish this as alabaster. Sometimes its colours are disposed in bands, and sometimes they are disposed in clouds: the former is always preferred. *Gypseous alabaster* is about twice as heavy as water, its specific gravity being 1·9. In transparency it is superior to white wax, allowing the light to pass through it, but not the forms of objects. By a slight calcination or baking, it is converted into plaster of Paris. It is very easily worked, but not susceptible of a very delicate polish, and is formed by the mason into vases, columns, tables, and other ornamental furniture. In a church at Florence, thin slabs of it are used in the windows, instead of glass. Among the ancients, the most esteemed variety came from Carmania and Upper Egypt. The alabaster used by modern Florentine statuaries comes from Volterra, and other parts of Tuscany. It is seldom procured in large masses, the largest statues not exceeding two feet in height. It is easier to cut than Carrara marble, but it is not so durable when exposed to the weather; the sulphate of lime, which enters into its composition, being more easily dissolved by the rain than carbonate of lime, which constitutes Carrara marble. At Leghorn there is a large establishment, where statues and architectural ornaments of this alabaster are sold; and from this mart the greater proportion of these productions we see in England are procured. When a candle or lamp is put into a vase of this alabaster, it diffuses a mild and very pleasing light; and it is conjectured that the ancients lighted their temples in this manner, in order that the softness and weakness of the light might harmonize with the general character of the building.

The Derbyshire alabaster, of which there are splendid inlaid columns in the hall at Keddle-stone, is of the same kind with the Tuscan, but not so pure.

*Calcareous alabaster*, or calcsinter, is a species of stalactite, composed mostly of carbonate of lime, and is found of a variety of colours, pure white, yellowish, greenish, reddish, bluish gray. It is not quite so hard as Carrara marble, yet it receives a good polish. It is considerably heavier than gypseous alabaster, its specific gravity being from 2·4 to 2·8 times greater than water. Its transparency is about equal to that of white wax, and it burns to lime. Calcareous alabaster is distinguished into the common and oriental, the last division containing the hardest, finest, and best coloured pieces.

ALBANS, St. See *Saint Albans*, in text.

ALDEHYD, a new substance discovered by Liebig, as a product of the oxidation of alcohol and ether. It is a colourless, limpid and very volatile liquid, of a peculiar suffocating odour. It is prepared in largest quantity by distilling alcohol, manganese, and sulphuric acid. It is uniformly produced where alcohol becomes oxidised, and is largely contained in the nitric ether of the apothecary. It derives its chief interest from the fact of its becoming entirely converted into acetic acid or vinegar when exposed to air or oxygen. This process goes on most rapidly when the aldehyd is put on platinum sponge. It is probable that aldehyd is the intermediate product in the process in the arts

of converting alcoholic fluids into vinegar. As this process is conducted in Germany, the wine is permitted to percolate through a false bottom in a barrel; there is a constant circulation of air, and in the course of a very few hours the wine is entirely converted into vinegar. Now from the loss that is observed when there is a limited supply of air, it is thought by Liebig that part of the alcohol has been only so far oxidised as to have become aldehyd, which has escaped from its volatility.

ALDERNEY, (*a*); one of the Channel islands, is distant from Guernsey (north-east by north) about fifteen miles, or twenty from port to port; from Jersey about thirty-three miles from coast to coast, and forty-five from port to port; and about fifty-five or sixty miles south by east of Portland Bill, the nearest point of England. The communication with Guernsey is much more frequent and regular than with Jersey. Alderney possesses four vessels, the total burthen of which is only 150 tons. During the oyster season some of them ply on the French coast; but two, at least, run regularly to Guernsey, paying a visit occasionally to Jersey. The island is about $3\frac{3}{4}$ miles long, from north-east to south-west; about $1\frac{3}{8}$ broad; and about 8 miles in circuit. The south-east coast is formed by picturesque and lofty cliffs, from 100 to 200 feet high; but as the island shelves towards the north-east, the coasts in that direction are of less elevation, and more indented with small bays, such as those of Longy or Câtel (query, Châtel—Castle?) bay on the east, and of Braye on the north-west. The last affords good anchorage, and near it is the only harbour in the island, that of Crabby, which, however, is fit for none but small vessels.

The town of St Anne (the only town in the place) contains nearly the whole population of the island. It is customary for the agricultural part of the community, as well as the commercial portion, to reside in it; and hence the place resembles rather a collection of farm-houses than a town. The jurisdiction of Alderney is carried on by a governor and one or two officials, though all criminal causes are decided in the courts of Guernsey, of which the other island is a dependence. St Anne can boast of very few good houses, and these are all of them the residences of the king's officers, or, it may be, of the minister or surgeon. The town has a very deserted look, and this may well be, seeing that so many of its inhabitants do really leave it during the day for their labours in the fields. At one time the farmers of Alderney profited highly by their celebrated breed of milch cows, but long since the British islands have been supplied with the breed sufficiently to render any reference to the original source unnecessary. The cows are small, but produce an immense quantity of milk; and fourteen pounds of butter per week is not uncommon from one animal. Though the town of St Anne, from the circumstances we have mentioned, is by far the most important point in the island, what may be called the country presents many objects worthy of attention. "The appearance," says Mr Inglis, "of the cultivated part of the island, is singular, owing to the very minute properties, and the odd way in which the proprietors have sown their crops. It is all laid out in narrow stripes of different sorts of grain, and in lucerne, potatoes, clover, tares, &c. These lie in all different directions, straight across and transversely; and to so great an extent has the division of property extended, that, in looking at a proprietor ploughing his stripe, it is difficult to see how he will find room to turn his plough on his own land. The ploughs which I saw at work were small wheel-ploughs, worked by three horses and two men. The total absence of farm-houses and cottages, and the total absence of trees or plantations of any kind, give to the island a bare aspect. Still, under a bright sun, there is beauty every where; and the spangled grass, and furze hedges, covered with their bright and fragrant blossoms, and the song of innumerable larks, and the pretty cows tethered among their clover, were sufficient for any traveller, unless for the churl who can walk from Dan to Bersheeba, and say, 'all is barren.'"

The population of Alderney is decreasing by emigration, which is attributed to want of trade and employment. The majority of the emigrants go to Guernsey and Jersey, some to America. The population was, in 1813, 1308; in 1821, 1151; in 1823, 1066; in 1831, 1045; in 1841, 1030; of whom a considerable majority were females. The inhabitants are much engaged in fishing.

ALGIERS, (*a. to the article Barbary States.*) The town of Algiers is situated in 36° 49′ N. lat. 3° 25′ E. lon. on the southern shore of the Mediterranean sea, the waves of which wash its walls. It is built in the form of an irregular triangle, the base of which is formed by the sea-coast. The streets of the town are remarkably narrow, filthy, and uneven; very few of them cross others at right angles, and very few are straight. The principal street extends from east to west, traversing the town in its greatest breadth: its length is 1200 paces, and its breadth twelve. It contains the best shops, the houses of the principal merchants, and the market for corn and all provisions: in all the other streets it is rarely that two persons can pass abreast. The inconvenient construction of the streets manifests not only the bad taste of the inhabitants, but indicates the absence of those numerous and complicated relations which are found in modern European towns, as well as the want of vehicles of burthen or convenience. Similar causes produced towns of a similarly bad construction in Europe in the middle ages. The houses, as in most other Moslem towns, are square, enclosing an open court in the middle, into which, and not into the street, all the windows open. The roofs, as in most southern and oriental towns, are flat, and in the evening the families resort to them to enjoy the sea-breeze. Formed into terraces, they often support gardens with pavilions, or closets, to which the master of the house withdraws at the hour of the *siesta;* and, reclining upon a sofa, amuses himself by smoking the tobacco of the Levant, or by chewing opium, while his attention seems directed to the sea, the softened roar of whose waves lulls him to slumber. As the houses are contiguous, a person may walk from one end of the town to the other along the terraces; but it is, nevertheless, very rare that any one complains of having his house robbed. Some few houses are of a very superior description, being paved with marble, and lined with wainscot, carved with some elegance, and gilt or painted in the best style of Moslem taste. There are some handsome buildings without the town, and a great number of tombs, some of which are furnished with oratories, to which the inhabitants resort every Friday.

The numerous expeditions fitted out to curb or punish the Algerine pirates have been noticed in the article *Barbary States.* In 1829, France fitted

out an armament, not only to chastise the Algerine government, but to take permanent possession of the country and of the port, which had so long been a den of robbers. This expedition consisted of 37,639 men, with the requisite cavalry and artillery. The number of vessels altogether was 644. The commander, Marshal Bourmont, conducted his system of attack with great prudence, and gave France possession of Algiers with very slight loss. The captive dey, or sovereign, was sent to Europe, and he now lives on an allowance as a private individual. The expenses of this expedition were amply repaid to France by the public treasures of gold and silver which were found (amounting to about two millions of pounds sterling); besides £300,000 of stores. She was left mistress of the finest district of Northern Africa, and had besides the satisfaction of breaking up thoroughly a nest of pirates, who had kept the Mediterranean seas under contribution for nearly two centuries.

When the French first obtained possession of the country, their design was to convert it into a colonial settlement, and to introduce French cultivators with habits of European industry, and more efficient modes of labour. They accordingly brought over a number of settlers both from France and from Rhenish Bavaria, established a *ferme modèle*, or pattern farm, and gave every encouragement to colonists who had either skill or a little capital. It was soon found, however, that there were difficulties in the way of carrying this plan into effect, which had not been anticipated. In the first place, the French had calculated on taking possession of all the lands held by the Mahommedan religious establishments, and which were considered as public property, but it was soon found that the greater part of these were only nominally in possession of the church (if the *mosque* may be so called), having been merely conveyed in a certain form to the priests, in order to remain under their protection for the use of the actual owner or his heirs, in case of any attempt at confiscation by the government. The priests were in fact only trustees for others. This narrowed greatly the choice of lands which it was intended to bestow on the new colonists. In the next place, the settlers themselves, being generally poor people, were without means of procuring effectual shelter from the heat or dews, and accordingly numbers of them fell victims to the change of climate. Their manner of living was, besides, much more expensive, and required much higher wages to maintain them in health, and in working condition, than that of the natives of the country. There was an additional reason, we believe, which must always prevent French colonies of this kind from being successful, that France has neither capital nor skill to throw away on such enterprises. All the people who have either stock for carrying on business, or skill for any useful trade, are wanted at home by the necessities of their own country, and have no temptation to emigrate.

These causes, and perhaps others, have now determined the French to give up their original idea of colonising the country, and of introducing European modes of agriculture. The object now is, by establishing a regular and steady form of government, to give confidence and alacrity to the industry of the natives themselves, and to lead them to improvement, by the prospect of securely enjoying the fruits of their own labour. Roads are in progress for this purpose between some of the principal towns, and every means are taken to prevent the incursions of those demi-savage and hostile tribes who have been accustomed to harass the country from their fastnesses in the mountains.

The people who are thus to be managed, consist of several distinct races.

The following enumeration of the different tribes is given on the faith of the French "Journal des Sciences Militaires":—

| | |
|---|---|
| Moors and settled Arabs | 1,200,000 |
| Independent Arabs | 400,000 |
| Kabylies or Berbers | 200,000 |
| Jews | 30,000 |
| Turks and Christian renegades | 20,000 |
| Kolouglis, or descendants of Turks | 20,000 |
| | 1,870,000 |
| European population. | |
| French settlers, merchants, &c | 1,927 |
| English subjects (chiefly Maltese) | 421 |
| Spaniards | 1,052 |
| Sardinians, Germans, Italians | 621 |
| | 1,874,021 |

The same amount of population is stated by M. Gravery de Henesro, the Swedish consul; but the numbers of the several classes are with him very different: the reason of which no doubt is, that the distinctions betwixt the classes are not very obvious, and in some cases cannot be at all recognised. He reckons, however, 70,000 negroes, whom we do not find in the French account.

The population of the town of Algiers was estimated at 70,000 (Captain Roset makes it no more than 30,000) before its subjection to the French, since which it has undergone considerable diminution—perhaps of one-fourth—by emigration; but, on the other hand, it is to be remembered that the French army of occupation in the territory amounts to 24,862 men, with 2,775 horses. The prices of commodities have undergone a very considerable increase during the period in which the town has been under French authority. Thus, the average price of an ass has augmented from 12*s.* to £2, 10*s.*; a horse from £2 to £8; a mule (the use of horses was interdicted to the Moors) from £6 to £14; an ox from 15*s.* to £2, 10*s.*; and a sheep from 2*s.* to 10*s.*: the camel, of which the French make no use, has preserved its former price. The prices of other necessaries have increased in nearly the same proportion as those of animals: thus, for instance, the value of corn and wood has been doubled.*

* Algiers is daily assuming a more European aspect; hats are nearly as often seen as turbans, cigars have replaced the long pipes, and the Moorish bazaars give way to the glazed windows of French shops. Upwards of fifty merchants have established counting-houses; and a considerable number of mechanics and tradesmen, including of course a full proportion of modistes, couturieres, and perruquiers, are thickly scattered about. Eleven grand cafes with billiard-tables, four grand hotels (which are, however, execrable), three restaurateurs, one hundred eating-houses, two *cabinets litteraires*, one circus, a cosmorama, &c., have already been established, and cabriolets and omnibuses were shortly to ply from the Bab hazoon to Mustafa Pasha, and from Bab el haout to the Dey's country villa. The Kazbah is a little town in itself, containing the late Dey's palace, and several other houses and gardens. The palace has suffered much from the French soldiery, who, on first occupying it, pulled up the pavement, tore down the glazed tile-coating of the rooms, and otherwise committed great injury in their eager search after treasure. The marble flooring, the arched galleries, supported by marble pillars of fantastic but graceful forms, which surrounded the open courts, the elegant fountains which scattered coolness around, and the latticed shahnesheens, still, however, remain to pay the fatigue and trouble of the visitor's ascent. The *corps-de-garde*, with the gate, and the sycamores, banana-trees, and vines, which surround it, together with the mixture of French uniforms and Moorish costumes, formed altogether a beautiful little picture: as did also a wine-shop, shaded by a vine-covered *pergola*, under which were seated groups of soldiers playing at cards, drinking, flirting with some *piquantes* French brunettes, or teaching "Trompette," the dog of the regiment, a variety of tricks.—*Temple's Excursions in the Mediterranean*, 1835.

ALKALIMETRY means the process for testing alkalies. The principle of all plans of alkalimetry is the same, namely, trying how much acid is required to saturate a given weight of the alkali. The acid generally employed for this purpose is the sulphuric, but nitric acid answers equally well, and is indeed in the whole preferable, from this acid forming no insoluble salts, and therefore admitting of other tests being applied to the neutralised solution. The acid is brought to a proper specific gravity, and is then of such a strength that 100 measures of it in a graduated instrument, called the alkalimeter, exactly neutralise 170½ grs. of anhydrous carbonate of soda. This quantity is chosen because it contains exactly 100 grs. of real soda. It is obvious that on treating 100 grs. of any alkaline salt of soda with this standard acid, the per centage of real soda must be immediately obtained; for, were the 100 grs. all pure soda, they would require 100 measures of the acid; not being pure soda, they require for neutralisation that part of a 100 which they in reality contain. Litmus paper is used to ascertain the precise point of neutralisation; a little drop of the liquid is taken out on the end of a glass-rod and applied to the paper. If the paper be rendered blue thereby, more acid is required; if it be reddened thereby, there has been too much acid added, and the limits of neutralisation over-stepped. To remedy this blunder, an alkaline solution of known strength may be kept to neutralise the excess of acid. This is the plan adopted by the bleachers and painters for ascertaining the strength of their soda-ash, of rough carbonate of soda, as well as the value of kelp, barilla, &c. Some such process as the above is absolutely necessary, where the price of an article of commerce differs according to the proportions of the ingredients in each sample. To test the potashes and pearl ashes of commerce, the same standard acid is employed, but 152½ grs. are employed instead of 100 of carbonate of soda. The number of measures of acid required to produce neutralisation gives the per centage of potash in the specimen. The impurities of potashes are sulphate of potash and common salt, and of soda-ash, the sulphate of soda and common salt. The positive presence of these bodies is indicated by nitrate of barytes for the sulphates, and nitrate of silver for the common salts These two tests must be applied to the solution of the alkalies in pure nitric acid and distilled water. Crystals of carbonate of soda contain 21·8 p. c. pure soda, and good soda-ash from 42 to 48 p. c.

ALNWICK, in the county of Northumberland. (*a*). Population in 1831, 6788.

ALPS (*a*). To the readers of history, and of poetry, the Alps are a familiar name. From the days of the Romans, down to the present century, their inaccessible heights, eternal snows, and difficult and precipitous defiles, have given them a celebrity, hardly possessed by any other features of continental Europe. Placed as a natural barrier between nations frequently dissimilar, or hostile to each other, they have stood, abrupt, and impenetrable, as they were left by the deluge; and the little that man could do, in opening their avenues, or smoothing their passes, remained almost unattempted until the nineteenth century. But within the times of the present generation, and especially within the last five or six years, the aspect of these mountains has become less solitary and forbidding. Over nearly all the important defiles, smooth and spacious roads have been constructed, rocks have been penetrated, abysses have been spanned, terraces upon terraces have scaled the loftiest passes, —and the traveller who now rolls over them at his ease, secure of comfortable hotels, and regular relays of post horses, troubles himself little about the difficulties against which Hannibal urged his elephants, and Bonaparte dragged his artillery.

The mountainous country, usually denominated the Alpine region, covers a great portion of the continental territory of the king of Sardinia, the republic of Switzerland, and the Tyrolese dominions of Austria, together with portions of the immediately adjacent states. But the great or principal chain may be considered as forming a half oval, or crescent, having the valley of the Po in its centre, and the Gulf of Venice at its base. This chain commences in northern Italy, where it is continuous with the Appennines, and, skirting closely upon the Mediterranean along the Gulf of Genoa, turns to the north through Piedmont and Savoy, in which countries it throws up its loftiest eminences. It then passes easterly through Switzerland and the districts of Tyrol and Carniola, until it is merged in the less elevated ranges of eastern Europe. The geographical effect of this distribution is to separate the waters of the Po, from those of the Rhone, the Rhine and the Danube.

The most interesting features in the Alpine chain, are the depressions, or passable gaps, and the extreme elevations. The depressions, or notches in the summit of the ridge, furnish avenues, over which mankind, following the tracks of the chamois, have constructed mule paths, and afterwards roads practicable for carriages. These are seldom less than five thousand feet above the level of the ocean, and are mostly named from the mountains near which they pass, as the Simplon, the St Gothard, and the Splugen. The great elevations are for the most part abrupt and towering peaks, many of which, from their sharpness and steep acclivities, have received the appellation of *horns* and *needles*. Among the most elevated peaks are Mont Blanc, Mont Cervin and Monte Rosa, situated in the chain which divides Piedmont from Savoy and Valais;—the Finstraahorn, the Schreckhorn (horn of terror), and the Jungfrau, in Switzerland; and the Ortler-spitz in the Tyrol. The distinction of being the highest mountain in Europe has been lately contested between Mont Blanc and Monte Rosa. Since the observations of De Saussure, no doubt had been entertained that Mont Blanc was entitled to this precedence. But in 1819 one of the inferior summits of Monte Rosa was ascended by Messrs Zumstein and Vincent, who took trigonometrical observations of the higher peaks, and arrived at the conclusion that these inaccessible summits were more elevated than the top of Mont Blanc, by some hundreds of feet. Their account, published in the Memoirs of the Academy of Turin, immediately drew towards Monte Rosa the attention of the scientific, and travelling public, new admeasurements were undertaken, and from an elaborate topographical account and survey of this mountain by Baron Welden, published at Vienna in 1824, it would appear that the altitude of the two eminences is nearly equal, Mont Blanc, however, having the precedence by about eighty-eight toises.*

* The probable height of Mont Blanc is about 14,764 Paris feet. That of Monte Rosa 14,222. See an account of the latter mountain in Brewster's Edinburgh Journal of Science, vols. i. and ii. As the upper stratum of these mountains consists of snow, it is very probable that their height varies in different seasons.

Mont Blanc derives its name, though not a distinctive one, from its mass of perpetual snows,—Monte Rosa from the circular distribution of its peaks, which enclose a central valley or amphitheatre. Mont Blanc has been repeatedly ascended, though with great danger and difficulty, by adventurous travellers; but the upper summits of Monte Rosa, though often attempted, have never yet, we believe, been attained.

On the tops of the loftiest mountains water rests like a mineral substance from age to age, fixed in the form of consolidated ice and snow. Immense masses, which gather upon these heights in winter, seek afterwards a lower level, in obedience to the laws of nature. This fluctuation, the result of necessary influences, gives birth to scenes of unequalled sublimity and beauty, and actuates, as it were, the moving scenery of the Alps. The cascade, the torrent, the progressive glacier, and the overwhelming avalanche, are but the shiftings, by which a disturbed element seeks to resume its wonted equilibrium.

The traveller, passing in summer through the valleys of the Alpine regions, sees often before him what appears to be a white thread, suspended from the mountain side. This he knows to be a waterfall, but if he has seen Niagara, or even Terni, he will be struck with the great length of the cascade, perhaps five or six hundred feet, compared with the slender dimensions of the stream which constitutes it. These cascades generally reach the ground by successive leaps, but now and then a case occurs, in which the fall is unbroken, and the apparent slowness, the effect of distance, with which the air is traversed by the descending waves and volumes of spray, gives to the spectator the idea of something which floats, rather than falls. We recollect to have seen instances, in which a considerable stream jetting from the top of a precipice, was dissolved in spray, and wholly lost to the sight, before it had accomplished half its destined descent. A brook, starting from beneath and fed by the perpetual shower, gave evidence that the material of this beautiful illusion was not lost. A fall of this kind, singularly picturesque, is seen in the vale of Misocco, on the southern side of the Bernardino passage. The celebrated fall of Stauhbach, in Lauterbrunnen, nine hundred feet in height, is of the same description.

The long valleys which separate the mountainous spurs, usually afford beds for torrents, constituting the head waters, from which are accumulated the great rivers of Europe. These frequently occupy the bottoms of deep ravines, and when swollen with rains, or melted snows, exhibit a scene of obstructed, yet irresistible violence, which impresses the spectator with the deepest awe. On the principal roads, these are crossed by bridges of substantial masonry, in constructing which, it seems often wonderful how the workmen could have found support. In some cases, we are told, it was found necessary to suspend stagings upon cords from precipices far above them. In the wilder and less frequented paths, frail wooden bridges, and sometimes trunks of fallen trees, constitute the means of passing. It has happened that, in cases of emergency, both men and animals have crossed these torrents, even without the aid of bridges, and in the face of difficulties seemingly insurmountable. In 1800, a detachment of French troops under General Betheneourt, was ordered to occupy the pass of Yéselles, and proceed upon Domo d' Ossola. Their march was interrupted by the destruction of a bridge which led round a precipice, and over an abyss sixty feet in width. A volunteer, at great hazard of his life, by supporting himself against the sides of the precipice, in the holes cut for the timbers, succeeded in carrying a rope to the opposite side. Upon this rope, suspended over the abyss, with their feet braced against the lateral wall, or such other objects as might present, the whole detachment passed, one by one, the commander setting the first example. The names of the officers are now engraved upon the rock. When the last man had left the bank, five dogs which belonged to the party, threw themselves into the current. Three of them were carried down, while the others, by dint of greater strength, succeeded in gaining the opposite side, and crouched, half dead, at the feet of their masters.

The *lavanges* or avalanches take place whenever the mass of snow accumulated on the heights, becomes, either from its own weight, or the insufficieney of its base, incapable of supporting itself. The avalanches of different seasons are not equally dangerous. Those of summer are confined to the highest mountains, and seldom reach the places frequented by mankind. Those of winter also, though sometimes terrible in their effects, yet being often composed of the light and new-fallen snow, slide downwards in smaller masses, and with less violence, so that men and beasts have been dug out unharmed from beneath them. But the avalanches of spring, which take place after the sun has begun to loosen the hold by which projecting masses are detained on the brink of precipitous summits, are by far the most dangerous and destructive. Imagination can hardly conceive the fearful sublimity, and havoc, with which these descents are attended. Columns of consolidated snow, whose extent the eye can hardly span, sweeping downwards for mile after mile, bearing with them the loosened rocks and uprooted forests, and discharging themselves at length on the valleys below with a violence under which the earth trembles,—are the common and yearly phenomena of these romantic regions. A fallen avalanche, says Ebel, sometimes covers more than a league of country. The concussion of the atmosphere is so great, that houses have been overthrown, and men prostrated, at a distance from the scene of devastation. At the season of avalanches, when the impending masses are just ready to loose their hold, the inhabitants believe that the smallest noise or shock given to the atmosphere, may start them into motion. Hence, in many places, they take off the bells from their horses and cattle, and steal silently through the dangerous paths, choosing the early part of the day, before the sun has begun to act with power. It is also common to discharge a musket, by way of proof, before entering the suspected defiles.

As in other mountainous countries, not only the snow, but sometimes the earth itself, is loosened, and slides downward, carrying desolation in its progress. A remarkable slide of this kind occurred at the village of Goldau, in 1806. In September, after a long continuance of rain, one of the summits of the Rossberg, was detached from the mountain and fell into the valley and lake beneath, overwhelming the villages of Goldau, Boussingen, and Rothen. The houses, cattle and nearly five hundred of the inhabitants, were destroyed by this event. Some travellers from Berne, says Simond, arrived at Art, and set off on foot for the Rhigi, a

few minutes before this catastrophe. A part, who were behind the rest, observed that some strange commotion was taking place on the summit of the Rossberg,—and immediately a flight of stones like cannon balls, traversed the air above their heads; a cloud of dust obscured the valley; a frightful noise was heard, and they fled. As soon as the obscurity was so far dissipated, as to make objects discernible, they sought their friends who had preceded them, but the village of Goldau had disappeared under a heap of stones and ruhhish one hundred feet in height, and the whole valley presented nothing but a perfect chaos. Nothing is left of Goldau, but the bell, which hung in its steeple, and which was found about a mile off. About fourteen miserable objects were dug out alive, from beneath the ruins.

The vestiges of catastrophes, similar to the above, are seen in various parts of Switzerland. At the entrance of the Val Blegno, not far above Belinzonna, may be seen the vast *debris* of a mountain, which fell across this valley in the year 1512. The fallen mass arrested the course of the river Blegno, and formed a large lake, which continued above two hundred years, but which, in 1714, burst a passage, and swept its way, with great destruction of lives and property, into the Lago Maggiore.

The name of glaciers, in its broadest sense, has been applied to all accumulations of ice and snow, which remain through the year upon elevated mountains. In its more limited meaning, it is restricted to those masses of hardened snow, which occupy the higher valleys and northern sides of ridges, extending downward to the horders of vegetation. They are generally found in the valleys and chasms, which run from east to west, in which they are more protected from the rays of the sun. Those of them, which have much inclination, exhibit a diversified surface, which has been compared to the waves of the sea during a storm. The alternate thawing and freezing of a portion of the snow, give to the remainder, among which it percolates, a degree of density approaching that of solid ice. The depth of the glaciers is supposed to be from one to six hundred feet and upwards. Vast crevices and chasms intersect the entire mass, opposing serious impediments in the way of adventurers who traverse them, and exhibiting the interior ice of a dark blue appearance to the eye. It usually happens, that in the lowest glaciers, the heat of the earth, especially during summer, dissolves the ice at the bottom, giving rise to extensive vaults, from heneath which streams of water issue. A striking instance of this kind is seen in the source of the Arveiron, which takes its rise under the Mer de Glace, in the neighbourhood of Chamouni. Some of these vaults have been found a hundred feet in height, and sufficiently extensive to undermine portions of the glacier, which settle down upon them with tremendous noise. Where there is sufficient declivity the glacier advances, during these changes, toward the subjacent valley, and thus appears to extend itself hy a sort of natural growth. When Sir J. E. Smith visited the Montanvert in 1787, the Arveiron derived its source from several cascades, which fell from the top of the glacier, a sufficient evidence that it had then settled so as to obliterate the cavites underneath. Rocks of large size are occasionally carried along on the surface of the glacier, serving as landmarks, to measure the progress of the whole mass. Others are accumulated in high ridges along the borders of the ice, constituting what are called *moraines*. Ebel computes that from Mont Blanc to the Tyrol, the number of glaciers is not less than 400, many of which are six or seven leagues in length. It is not to be understood that the uniform tendency of these hodies is to extend themselves. During warm seasons they sometimes diminish in a very rapid manner, by the melting of their lower extremity.

Previously to the year 1800, and even at a later period, most travellers who entered Italy from the north, were obliged to cross the Alps by mule paths, never convenient, and sometimes extremely difficult. The transportation of merchandise, and especially of warlike stores and artillery, was an undertaking of the most arduous character, of which the passage of the Grand St Bernard hy the French invading army in 1800, is a well known example. After the conquest of the Italian states, the enterprise of Napoleon Bonaparte planned and executed two great military roads, practicable for carriages and artillery, one extending from Geneva to Milan, across the Simplon; and the other leading over the pass of Mont Cenis, and opening a communication from Lyons to Turin. These roads, it is hut small praise to say, impress every traveller with astonishment, and are monuments of consummate skill in the engineers, who seem to have brought Herculean powers to suhdue what nature had intended to he insurmountable. In the Strada Sempione at Milan, a triumphal arch was begun by Napoleon, at the termination of the Simplon road, to commemorate the completion of his stupendous enterprise. It is of white marble, and is ornamented with bas reliefs, representing the victories and treaties of the Emperor. After his fall, this structure, one of the largest and most beautiful of its kind, was suffered to remain unfinished, and was even threatened with dilapidation. Travellers who arrived from the mountains, fresh in their admiration, were accustomed to vent their displeasure upon the penurious jealousy of the Austrian government, which neglected to complete this monument, covered as it was with the testimonies of their own humiliation. But Napoleon is now a dead lion, the Austrians have resumed the work, and now the structure may be considered as nearly completed. Unfortunately, however, for the objects of the founder, they have not been content to complete the structure, but have likewise gone on to complete the history. The tablets beneath, which represent the battle of Marengo and the humiliating treaties which followed, are allowed to remain unharmed; but they are surmounted with others of equal execution, setting forth the battle of Waterloo and the abdication of Bonaparte. The triumphal chariot, and bronze horses, which were to support the statue of Napoleon upon the top, will be occupied by an allegorical figure representing Peace. This is consonant to justice, and historical truth. For every road which Napoleon made over the Alps, peace has since caused the completion of three times the number, all equally deserving the wonder and gratitude of the public. The traveller, at his ease, may now ride into Italy from any point between Marseilles and Vienna. Broad highways are completed over the Cornice, the Col de Tende, the Genévre, the Bernardino, the Splugen, the Brenner and the Stelvio. Last summer the St Gothard was opened for carriages, and a road over the Maloya was nearly finished. Upon most of these, the yearly influx of travellers to Italy has justified the establishment of regular post houses.

To Napoleon is due the credit of having set the

example, and proved the usefulness of these great avenues. But the years of peace, which have followed his dethronement, while they have indefinitely increased the amount of communication between Italy and other countries, have at the same time afforded to the governments concerned, the leisure and means requisite for multiplying these works of public utility.

The Alpine highways resemble each other in their great features, and are among the proudest constructions of art. They would almost impress us with the belief, that nothing is impracticable to ingenuity and labour. These roads usually pursue the course of streams, or valleys, gaining a higher level on their sides, as occasion offers, and at length climbing the principal ridge by what are called *tourniquets*, a succession of terraces connected at their ends alternately in a serpentine manner. Their course often lies along the sides of precipices, jutting out over fearful depths, or crossing torrents and ravines upon bridges of giddy height. Sometimes it appears as if the road had come to an end, against an insuperable steep, or projecting spur of the mountain. But here the skill of the engineer eludes the difficulty, sometimes by throwing a bridge through the air, to the opposite side, and sometimes by entering the rock itself with a subterranean gallery. In places particularly exposed to avalanches, the road either buries itself in the rock, or is protected by massive stone arches, forming covered ways, over the passages exposed. Much injury, still, is done, every year, to these roads by the descents of snow and of water, and they are kept in repair at great expense, by the governments to which they respectively belong.

The highest of the passes over which a carriage road has been constructed, is that of the Monte Stelvio, on the route from Botzon to Milan. It was made by the emperor of Austria, since 1814, to establish a communication with the Milanese, without quitting his own territory. The summit ridge, which it crosses, is more than nine thousand feet above the level of the sea, and seven hundred above the estimated line of perpetual snow, in its latitude. This great elevation rendered it one of the most arduous roads in its formation, as it is one of the most difficult to keep in repair. It was found necessary to construct from two to three thousand feet of galleries or covered ways, to shelter the road from avalanches and falling rocks, which sweep over it in certain places. "On this road," says Mr Brockedon, "shortly after leaving Prad, the magnificent mountain of the Ortler-spitz opens suddenly on the view of the traveller, with a vast and appalling effect, as it is seen from its extreme summit to its base, robed in everlasting snows, which descend on its sides in enormous glaciers, and stream into the valley below. Immense masses of rock, in themselves mountains, throw out their black and scathed forms, in striking contrast with the brightness of the glaciers which they separate." This part of the route, or rather the whole ascent from Drofoi, the author considers "without a parallel in Alpine scenery."

The passage of the Brenner, leading from Inspruck to the Lago di Guarda and Verona, is the lowest which crosses the great chain of Alps, being only 4700 feet above the level of the sea. It is also one of the oldest of these roads. A dark, narrow valley between Sterzing and Mittenwald, is famous for having been the place of a successful resistance of the Tyrolese, under Andrew Hofer, against the French and Bavarian army in 1809. Great numbers of the latter were destroyed by stones rolled down upon them from the heights, which overhang the defile.

The pass of the Splugen, leading from Coire, the capital of the Grisons, to Lake Como, is said, in Starke's Guide-book, to "surpass in magnificent, sublime and awful scenery, every other carriage road in Europe." We know not how far this exclusive praise may be just, but we are certain, from ocular conviction, that a portion of this road, called the Via mala, extending several miles between the villages of Andeer and Tusis, richly merits all the terrific encomiums it has received. It is the deep and narrow gorge through which the Hinter Rhine makes its escape from the mountains, between mural precipices a thousand feet in height, and just far enough asunder, for about four miles, to furnish a scanty bed to the torrent. How the Romans made their way through this chasm, into Rhætia, or the barbarians afterwards broke through the same track into Italy, no one at the present day can imagine; except by supposing them to have diverged to the neighbouring mountains; for the sides of the chasm are perpendicular rock, and the bottom is monopolized in a most unqualified manner, by the furious and turbulent Rhine. The modern road is a shelf, or notch, formed about midway in the precipice, and several times disappearing within the rock, for many rods together. A bridge crosses the chasm, at such a height, that the Rhine, always chafed and foaming, looks, from it, like a white cord, in the perpendicular distance; and a large stone, dropped from the parapet, seems floating for several seconds in the air, and when it strikes the water, a loud explosion is sent upward. In November and December, 1800, a French army of reserve, under Macdonald, crossed the Splugen, enduring the horrors and hardships of an Alpine winter, being arrested by the obliteration of the path, and losing many men and horses, by the avalanches. The sufferings of this passage are recorded by Count Philip de Segur, a well known historian of military disasters.

On the north side of the ridge of Splugen, and near the village of the same name, a road diverges through the valley of the Rheinwald, and crossing Mount Bernardino, follows the course of the Moesa till it joins the Ticino, and the road from St Gothard. It then continues to the Lago Maggiore and a branch of it to the Lugano. On the principal lakes there are now established steamboats, which ply daily between the extremities of these waters. We observed, that they generally hear the classical names of the lakes which they traverse, as Il Lario, Il Verbano, Le Leman, &c. The scenery afforded by the passage through Lakes Como and Maggiore is exquisitely picturesque.

Persons going from central Switzerland by Altorf to the Lake Maggiore, may now cross in carriages the pass of St Gothard, celebrated alike for its romantic scenery, and its military history. The name of Suvaroff is engraved on a rock, near the desolate summit, at a place where that commander obtained a victory over the French in 1799. The celebrated Devil's Bridge, over the torrent of the Reuss, is a single arch of seventy feet span, thrown across a rushing cataract, at the height of a hundred feet above the water. "It is impossible," says Mr Brockedon, "to think of such a structure, in such a situation, without shuddering at the idea of the danger to which those who built it must have been

exposed." Yet this bridge has more than once been the scene of conflicts between the French and Imperialists, in the campaign of 1799; and once during the heat of an engagement, while the French under Lecourbe were in the act of charging the Austrians, thirty feet of the bridge separated and fell from the parapets, precipitating all who were upon it into the gulf below.

The fame of the rout of the Simplon has reached all persons, who have interested themselves about the Alps, or Napoleon Bonaparte. It has been customary for most travellers to take this road either in going into Italy, or in returning from it, thus gaining a direct conveyance between Geneva and Milan. Considered as a work of art, the Simplon road probably exceeds all the others, in the neatness and architectural finish of its parapets and bridges; and it is exceeded by none in the magnitude of the difficulties overcome by the French and Italian engineers employed in its construction. The great gallery near Gondo is 596 feet long, and is cut through solid granite. Its southern extremity, where a bridge crosses the waterfall of Frassinone, at the entrance of an impassable gorge, is almost unequalled in picturesque and imposing effect. The Gallery has lateral openings to admit the light, opposite to one of which, the following inscription is cut in the rock,—ÆRE ITALO 1805. The part of the road which is on the Swiss side of the Simplon, was completed by French engineers; but the southern half, which is by far the most difficult, was executed by Italian artificers, under the Chevalier Fabbroni, at the expense of the Italian states.

The valley through which this road passes, extending through the Canton of Valais to the Pays de Vaud, is enclosed by a rampart of the highest mountains in Europe, having the peaks of Piedmont on one side, and the Bernese Alps on the other, some of which rise more than 10,000 feet above it. It has been considered as the deepest valley in the known world. Aware of this circumstance, the traveller receives, from the scenery around him, impressions of sublimity, such as belong only to the presence of natural objects, which are known to be unequalled in their kind. They are emotions like those which may be inspired by the river Mississippi, lake Superior, or the cataract of Niagara. Beyond the immediate effect on the senses, there is a deep and commanding interest, a pervading solemnity, which call on us to pay homage, to what has never been out done. But in this valley the beautiful also mingles with the sublime, and the solitudes which shelter in its infant growth, one of the most rapid and turbulent of rivers, have gathered round it the elements of fitness, which convey to the mind ideas of a recess and sanctuary of nature.

> "'Tis lone,
> And wonderful and deep, and hath a sound
> And sense and sight of sweetness. Here the Rhone
> Hath spread himself a couch, the Alps have reared a throne."

The pass of Mount Cenis, already mentioned, and that of Mount Genévere, made by Napoleon between Grenoble and Turin, are carriage roads, possessing features of the same general kind with those which have been described. But the Cornice, or Mediterranean road, is essentially different from the rest, being not so much a pass of the Alps, as it is a passage by which the Alps are avoided. It is true that the Maritime Alps here come down to the sea so abruptly, as to leave no room for a level passage between the mountains and the water. Nevertheless an excellent road is now constructed, which no where rises to a great height, and by which invalids travel to Nice and to Italy, at all seasons of the year. The Mediterranean way was known to the ancients, and it was by this pass, says Mr Brockedon, that Julius Cæsar penetrated into Italy when about to engage in his contest with Pompey. This road presents, from many of its eminences, splendid views of the sea beneath, while, on the other hand, it is distinctly seen along the coast, from the steamboats, which ply between Marseilles and Genoa.

It will be observed that the roads which have been made practicable for carriages, are principally large thoroughfares, by which intercourse is carried on between Italy and the adjacent states. But a vast number of mountain passes, in less frequented directions, are still traversed only by pedestrians and mules; or in some cases by a low, narrow carriage, called a *char à banc*. Of this kind are the various avenues to the vale of Chamouni, the fearful pass of Gemmi near the baths of Lenk, the defiles of the Grimsel and Gries, which approach the sources of the Rhone, the various paths by which the Oberland is traversed, numerous tracks which lead up the sides of mountains, among which should not be forgotten the Wingernalp, beautifully described by Simond, from which the traveller at midsummer, witnesses in safety the hourly fall of avalanches from the opposite side of the Jungfrau.

The passes of the Great and the Little St Bernard are interesting from their proximity to Mont Blanc, lying on opposite sides of it; also from their scenery and historical associations. The former is well known for the Hospice, situated near its summit, inhabited by a benevolent order of monks, whose business is to rescue and relieve distressed travellers. It may seem singular that neither of these long and well known passages, has yet been made the site of a carriage road. But the king of Sardinia has shown himself less fond of public improvements of this kind, than his more communicative neighbours.

A controversy has been agitated with some zeal, in regard to the particular pass by which Hannibal crossed the Alps with his Carthaginian army. Different speculators, who have endeavoured to trace his track, by the histories of Livy and Polybius, have assigned the Monte Viso, the Genévre, and the Mont Cenis, as corresponding in their situation and character to the route he is said to have pursued. In a work entitled "a Dissertation on the Passage of Hannibal over the Alps, by a member of the University of Oxford," the author, after an elaborate investigation of the subject, decides on the Little St Bernard, as the true route of the Carthaginian army. Mr Brockedon adopts the same opinion, having carefully examined the features of this pass, in reference to the historical data which have reached us. Hannibal, it seems, on his arrival from Spain, crossed the Rhone, probably somewhere near Avignon, and ascended that river above its confluence with the Isaure. He afterwards passed eastwardly towards the mountains, encountering the Allobroges and other warlike tribes on his way. It is to be regretted that the names of places are not marked with sufficient distinctness by Polybius, the historian who is chiefly relied on in this matter.

ALTAR (*a*); a place on which offerings or sacrifices were made. It was called *bomos* by the

Greeks, in a general sense; *aræ* and *altare* by the Romans.

The use of altars must have been as ancient and general as the use of sacrifices and offerings; and were erected in temples, porticoes, peristyles, in the open air, and on the summits of mountains. The larger temples had generally three altars: the first placed in the sanctuary, or adytum, at the foot of the divinity; the second at the door of the temple; the third was portable, and called anclahris, on which were placed offerings and the sacred vases.

In early times they appear to have been formed of any material admitting of a convenient or rapid execution—a mound of turf, a heap of stones. The altar consecrated by Jacob at Bethel, was merely the stone on which he rested, and that of Gideon was of a similar kind. The first altar erected by Moses was made of earth only. The altar which Moses commanded Joshua to build was of unhewn stone; Solomon's was of brass, but filled with unhewn stones; that built by Zerubabel and the Maccabees, of rough stones.

Among the seven wonders of the world, was an altar at Delos, which was made of the horns of animals; tradition reported that it was constructed by Apollo, with the horns of deer, killed in hunting by his sister Diana. Plutarch says he saw it, and that he admired the wonderful interlacing of the horns of which it was made, and that no bond or cement was used to hold it together. In the magnificent temple of Jupiter, at Babylon, there was an altar of massive gold. The altars used by the Greeks and Romans were of bronze, but the greater number of stone or marble, bricks, &c. Pausanias mentions one of wood, made so artfully as to appear to have been built of stone.

Some altars were solid, and some hollow, from the top downward, pretty low, to receive either the libation or the blood of the victims; others again were made of iron bars only, like that on the column of Antoninus.

A grand altar for the burning of the sacrifice is to be seen at the Pamphili palace, at Rome; where is remarked the fire-place, on which charcoal was put to consume the victim, and other passages, for the escape of the blood.

Altars vary almost to infinity in their forms and size, as well as in their decorations. Their shapes were innumerable: cubes, parallelograms, frustra of cones, of pyramids, and polygonal pyramids, and portions of cylinders, &c.

ALTHORP, OR OLDTHORP, formerly a hamlet in the county of Northampton, from which Earl Spencer derives the title of Viscount. "The domain of Althorp," says Dibdin, "has been possessed by the Spencer family upwards of three centuries; but the exact period of the erection of the house seems to be unknown. There is, however, no question of its having received its principal improvements during the time of the first earl of Sunderland, (1636—1643,) who was the son of the second Baron Spencer. The lady of this Earl (daughter of Robert Sidney, second Earl of Leicester, and better known as the Sacharissa of Waller the poet) erected and covered in the great staircase, which had been formerly an interior courtyard, in the fashion of the times. From that period to the present, both the house and park have continued to receive improvements. The family of the Spencers became possessed of the park at Althorp, about the year 1512 This originated in a license from the king to John Spencer, afterwards Sir John Spencer. At that time the park is described as containing 300 acres of land, 100 acres of wood, and 40 acres of water in 'Oldthorpe,' but this seems to have been only an extension of some property previously acquired there, for it is certain that Althorp, so called, was purchased by this Sir John Spencer as early as the year 1508." The great attraction of Althorp House is its noble library, of which Dibdin says it is "the finest collection of books perhaps in Europe. It occupies a suite of rooms, four in number, and measuring in the whole about 170 feet in length. These are garnished from top to toe with the choicest copies of the choicest editions of the choicest authors in the choicest bindings." Population of the hamlet in 1841, 55.

AMBERGRIS, (*a*); a solid substance, lighter than water, softening and mouldering itself by the aid of heat; of a greyish colour, tinged with yellow and black; of a remarkable odour; persistant and susceptible of great expansion; almost insipid. This substance is found in irregular round masses, formed in layers intermixed with nebs of the cuttlefish and excrement of fishes. These masses usually weigh about a pound, but some say ten or twenty pounds, and some others a hundred or two hundred pounds. These are found floating on the sea, on the coast of Madagascar, Coromandel, and in the Molucca and Japan islands. A great many hypotheses have been offered on the origin of ambergris, but one opinion only deserves to be reported, and that Dr Swediaur's. This learned physician, remarking that ambergris contained the remains of fishes, and especially the bones and nebs of the cuttle-fish, which is the chief food of the cachalot; and besides, as it has been sometimes found, in pretty considerable masses, in the intestines of the cetaceæ, he thinks that ambergris is formed in their bodies, and is to be looked on as a hardened excrement, or as *bezoar* of the cachalot. M M. Pelletier and Caventon compare it to human biliary calculi, as there exists in both an unctuous pearly matter (*ambréine*) not saponificd by alkalies, and acidified by nitric acid. There is also an abundant resinous matter, similar to that of the calculi. Besides, the bile of animals, when deprived of this matter, acquires in time an odour similar to that of musk or amber. Ambergris is soluble in alcohol and ether, leaving an inconsidcrable black residue. The concentrated alcoholic tincture forms even in a close vessel, and, in a short time, a crystallisation of *ambréine*, in the form of a cauliflower. The medicinal tincture is composed of twenty-four parts of alcohol and one of ambergris. Ambergris is much employed by apothecaries and perfumers; it is said to possess great aphrodisiac properties.

AMPHITHEATRE. An edifice formed of two semicircles united, in which all the spectators, ranged on seats in its periphery, saw equally well what was exhibiting in the area left in the centre; thus the Romans also named them "visoria." In general, amphitheatres usually consisted of a wall, pierced in its circumference by two or more ranges of arcades, having in the inside vaulted passages radiating from the exterior arcades toward the arena, and transverse vaulted corridors, opening a communication to every part of the edifice. The corridors and ranges of seats forming elliptical figures parallel to the outer or exterior wall.

The origin of the games which were exhibited in these buildings have been traced to the Etruscans, as well as the invention of the buildings in

which they were exhibited. From them the Romans derived their taste for these sanguinary spectacles, and which they introduced among every people they subjected to their dominion: thus we find amphitheatres in every part of the Roman empire; but it has been remarked, that there is no example of a similar institution in nations beyond the pale of their conquests. But we certainly ought not to look for the amusements of the amphitheatre and its sanguinary games among that people, the inventors and embellishers of the arts, and the softeners of the human character. The Greeks, at once civilized and warlike, tempered the ferocity of war by the pursuits of the arts and philosophy; they granted no honours and opened no gymnasia, but for exercises calculated to soften the spirit and to form the body. As long as they remained free, sanguinary and cruel exhibitions appeared not on their stages, nor did they ever pay men to mangle each other with dexterity or to die with grace. Some authors, however, say, that such spectacles were not unknown in Ionia; Winckelmann observes, that if the fact were so, they were not of long duration. Antiochus Epiphanes, king of Syria, was the first who exhibited these ferocious sports in Greece, but he brought gladiators from Rome. These wretched victims of a ferocious enjoyment at first excited pity only and horror in the minds of the Greeks; in process of time their sensibility became weakened, and usage at last rendered these horrid spectacles familiar.

The first mention of the combats of wild beasts in Roman history is about the year of Rome 568; and twenty years afterwards, Livy says, the shows were celebrated with no small pomp, sixty-three panthers, forty bears, besides elephants, were exhibited: from this time they gradually increased. Marcus Scaurus exhibited one hundred and fifty tigers. Pompey exhibited four hundred and ten tigers and five hundred lions, besides elephants. Cæsar, after the civil war, exhibited a still greater number, besides twenty elephants, and five hundred gladiators on foot, and three hundred on horseback. These games being advanced to such a pitch of magnificence, a new kind of edifice became necessary, in which they could be celebrated with more convenience and pleasure. In Cicero's time they were performed either in the theatre or circus. The circus, however, was objectionable on many accounts, besides its danger. At Pompey's games the people were in danger from the elephants, and Cæsar, to avoid the same accident, had trenches dug round the arena.

Augustus being a great admirer of public shows, particularly of the combats of wild beasts, (in one of his exhibitions three thousand five hundred of these animals were killed,) had a design to build an amphitheatre entirely of stone, but it was never carried into execution. However, in his time, Statilius Taurus undertook the affair, thinking that it might be agreeable to the emperor: and he erected, at his own charge, a hunting theatre of stone in the Campus Martius, and dedicated it by the combats of armed men; this, which appears to have been comparatively, of insignificant dimension, was destroyed by fire in the reign of Nero. From its small dimensions the public shows were yet exhibited in wooden amphitheatres. Caligula began another amphitheatre, but did not finish it. Nero built a new amphitheatre of wood in the Campus Martius, and finished it within the year: it was well founded, of great size, and firmly supported by large beams. Pliny (lib. xiv. c. 39.) says it had a beam of the larix tree, 120 feet long and 2 broad, which was carried from Rhætia by Tiberius's order, when that great emperor caused the bridge at the Naumachia to be rebuilt, and by him shown for a wonder, and preserved long after as a rarity. After the example of Rome, many other cities erected amphitheatres.

AMYGDALINE, the peculiar principle of bitter almonds, to which they are indebted for the difference of properties between them and sweet almonds. It is extracted from bitter almonds by means of alcohol, from its solution in which it crystalises in white mother-of-pearl like plates. This body consists of oxygen, hydrogen, carbon and azote. Amygdaline dissolves in water unaltered, but this solution suffers a most remarkable change when it is brought with the white emulsion of the almond. Prussic acid and the oil known as volatile oil of bitter almonds, are the results. The fact that bitter almonds distilled with water yields these two substances, has long been known, but the true nature of the reaction that here takes place, has only been lately cleared up by Wöhler and Liebig. It has been shown that neither prussic acid nor volatile oil of bitter almonds, exist ready formed in the almond; but that they are the products of the reaction of the amygdaline in the emulsion which is formed when water is added; amygdaline is contained in very small proportions in bitter almonds, on an average one ounce is obtained from four pounds. A formula for Prussic acid has been prepared for medical use from amygdaline.

ANAGRAMS, (*a*) are now hardly known as efforts of wit, but in ancient times they formed the subject of learned disquisition, and were ranked among the cabalistic sciences. The paltry process of anagramatising sentences and proper names was also extremely fashionable in the sixteenth and seventeenth centuries, occupying that place now enjoyed by conundrums, and other small means of amusement among the idle. The French are reputed to have been exceedingly fond of anagrams. On one occasion an anagram was made on the mistress of Charles IX., which threw the nation into an ecstacy of delight. The name of the lady was *Marie Touchet*, the letters of which words were transformed into *Je charme tout* (or, *I charm all*)—an anagram said to be historically just. But this anagram was perhaps surpassed by the following: The assassin of Henry III. was *Frere Jacques Clement*, and it was soon discovered that the letters of these three words could form the appalling sentence, *C'est l'enfer qui m'a creé* (or, *It is hell which created me.*)

Various anagrams were appropriately formed on the name and titles of our own King James VI., one of which was, *James Stuart—a just master.* One on the same monarch, but referring to his complete name, was, *Charles James Steuart—claims Arthur's Seat.* Of the poet *Waller* it was said—

> His brows need not with laurel to be bound,
> Since in his *name* with *Lawrel* he is crowned.

And *Randle Holmes*, a person who wrote a book on heraldry, was complimented by the expressive anagram, *Lo Men's Herald!* Perhaps the happiest of all anagrams, says D'Israeli, "was produced on a singular person and occasion. Lady Eleanor Davies, the wife of the celebrated Sir John Davies, the poet, was a very extraordinary character: she was the Cassandra of her age; and several of her

productions warranted her to conceive she was a prophetess. As her prophecies in the troubled times of Charles I. were usually against the government, she was at length brought by them into the court of high commission. The prophetess was not a little mad, and fancied the spirit of Daniel was in her, from an anagram she had formed of her name, *Eleanor Davies*—to *Reveal O Daniel*. The anagram had too much by an *l*, and too little by an *s*; yet *Daniel*, and *Reveal* were in it, and that was sufficient to satisfy her inspirations. The court attempted to dispossess the spirit from the lady, while the bishops were in vain reasoning the point with her out of the scriptures, to no purpose, she poising text against text. One of the deans of the Arches, says Heylin, took up a pen, and at last hit upon this excellent anagram: *Dame Eleanor Davies —Never so mad a ladie!* The happy fancy put the solemn court into laughter, and Cassandra into the utmost dejection of spirit. Foiled by her own weapons, her spirit suddenly forsook her; and either she never afterwards ventured on prophesying, or the anagram perpetually reminded her hearers of her state. No more was heard of the prophetess."

ANALYSIS, Chemical, OF INORGANIC BODIES. The aim of an inorganic analysis is to determine the constituents of an inorganic substance, and their proportions by weight. This department of chemistry has made great and rapid progress within the last few years, and analysis has now become an art within the compass of fixed rules. Inorganic analysis is of two kinds—qualitative and quantitative; the former should always precede the latter. Attention must first be given to the physical properties of the substance; it may be volatile, or combustible, capable of being sublimed, or it may be decomposed by heat. In order to separate the constituents of a body, it must in general be dissolved. For this purpose, pulverisation must frequently be first had recourse to; the effect of water is tried, and then of the mineral acids, if it prove insoluble or only partially soluble in water. The absence or presence of a particular body in this solution is found by the bringing small portions of it in contact with known compounds called reagents. From the appearances that present themselves, the operator is enabled to determine whether this or that substance be present in the substance tested. A practical acquaintance with the use of reagents, is absolutely necessary for the performance of every analysis. The changes produced by reagents are frequently escape of a gas, a precipitate, change of colour, &c. The more usual reagents are sulphuretted hydrogen, potash, ammonia, sulphuric and muriatic acids, ferro-prussiate of potash, &c. Many cases present themselves, particularly of siliceous minerals, which do not dissolve in the mineral acids, and which, to be analysed, must be brought into solution, by being previously fused with carbonate of potash; the constituents of the mineral are now found soluble in muriatic acid, with the exception of the silica, which remains in the form of a jelly. The reagents are applied to the solution, separated from the silica, in the same way as to solutions of substances in muriatic acid, which have not been previously fused with potash.

Having determined what are the ingredients of a substance, the next step is to determine the relative proportions of each. This is done by obtaining each of the substances, separated into compounds of known composition; not, or but seldom, by obtaining the substances themselves pure and uncombined with any other. Thus it is more usual to determine the proportion of sulphur in a compound, by converting it first into sulphuric acid, and then into sulphate of barytes, than by obtaining the sulphur in the simple form. The composition of sulphate of barytes is well known, the per centage of sulphur it contains has been rigidly ascertained, and it is therefore now become a mere matter of convenience to extract the sulphur in the simple form, or to obtain it in a known compound. In the same way the ores of iron are analysed, by obtaining the peroxide of iron they contain, and from thence calculating the amount of iron, and so on, of hundreds of minerals and other substances. As according to the theory of definite proportions (see *Atomic Theory*), every chemical compound contains always the same proportions of its ingredients, it is frequently sufficient to ascertain, by experiment, the amount of one of the ingredients of a substance, to be enabled to calculate precisely the amount of another ingredient. Thus, one way of analysing limestone is to measure or weigh the carbonic acid it contains, and thence to calculate the amount of lime in the mineral. When a substance contains many ingredients, its analysis is often troublesome in the extreme, and demands for its execution a stock of untiring perseverance, and the greatest accuracy. The reagents in such cases must be applied in a certain order; thus, to choose a very simple instance, the mineral garnet contains silica, alumina, lime, and oxide of iron. The mineral must be dissolved in muriatic acid, evaporated to dryness, and the silica thrown on a filter; the solution contains lime, alumina, and oxide of iron; to this solution caustic ammonia is added, which throws down the two last, but retains the first in solution; the precipitate is collected on a filter, and the lime which comes through is precipitated by oxalate of ammonia; the resulting oxalate of lime being dried and calcined, gives carbonate of lime, a compound of lime of well known composition. To return to the alumina and oxide of iron which we left precipitated on the filter, these must be redissolved in muriatic acid, and reprecipitated, and boiled with caustic potash. The alumina dissolves entirely, and leaves the oxide of iron pure.

The analysis of mineral waters is a very important branch of inorganic analysis. The substances dissolved in water may be gases or solids. Many springs contain large quantities of carbonic acid dissolved in water; its amount is known by bringing a known bulk of it in contact with an ammoniacal solution of chloride of calcium; the carbonate of lime which precipitates, being collected and weighed affords a correct indication of the quantity of carbonic acid contained in the water. The solid contents of a water are ascertained by evaporating to dryness a known quantity of water; and testing the salts obtained like any other inorganic compound. The presence of iron is best ascertained by immersing in the water a bit of gall-nut; if this, after the lapse of half an hour or so, strike an inky colour, the water contains iron. Common salt is tested by the amount of precipitate afforded by nitrate of silver.

ANALYSIS, Chemical, OF ORGANIC BODIES. Organic bodies generally contain only three or four constituents; these are carbon, oxygen, hydrogen and nitrogen. Nitrogen is contained in a comparatively small number of vegetable substances, but is most usually, though by no means always, to be

found in animal substances. The object of organic analysis is to determine the nature and relative proportions of these constituents. A knowledge of the composition of vegetable and animal products is absolutely essential to the progress of every investigation; it forms indeed the only true basis of a scientific research into their nature. Innumerable as are the organic compounds, and few as their ultimate elements have been above stated to be, yet correct analyses have shown but few compounds that possess exactly the same elements in the same proportions. The method followed in earlier times, for analysing organic compounds, was extremely imperfect, and does not resemble in the least that now followed. The present plan has reached a very high degree of perfection, and almost entirely by the instrumentality of chemists still alive—Gay Lussac, Berzelius, and Liebig.

The simplest mode of analysing organic compounds would appear, at first sight, to be that of obtaining the elements separate and pure; but such a plan is impossible, or at least, has never yet been practised. Nor is it at all necessary, for sufficient accuracy is attained when we separate the elements into known compounds. Nitrogen alone is obtained in the simple uncombined form, and indeed is always so estimated; but carbon, oxygen and hydrogen, are never, in organic analysis, obtained pure, but are estimated in the case of carbon, as carbonic acid, and in that of the other two elements as water. It will be obvious, that from the composition of carbonic acid being already established, the quantity of carbon can be correctly determined when the amount of carbonic acid is given; and in like manner, from the known composition of water, the proportions of hydrogen and oxygen may be calculated with the greatest accuracy.

The means, then, employed to arrive at a perfect knowledge of the composition of an organic compound, is by converting a known weight of it, into carbonic acid and water. When the substance contains nitrogen likewise, this body is collected generally in a separate process in the simple form. Perfectly to effect this conversion, and conveniently to estimate the quantities of the products, is the intention of the modes of organic analysis as now practised; this end is attained by mixing the body to be analysed with another highly oxygenated substance, which will readily part with its oxygen at a high temperature; for this purpose chlorate of potash, oxide of copper, and chromate of lead have been employed. The most usual, and for general analysis, the best, is the black oxide of copper, obtained by exposing the nitrate of copper to redness. This substance has the valuable property of resisting any amount of heat by itself, and yet of yielding up oxygen readily to organic substances at a moderate heat. It becomes reduced thereby to metallic copper. The carbonic acid gas and water which result from this oxidation, escape from the heated mixture of substance and oxide of copper, and are collected in apparatus shortly to be described, for ascertaining their quantity. The water is condensed by means of a substance to which it is known to have an immense affinity, namely, chloride of calcium, and the carbonic acid is absorbed by caustic potash. The increase of weight on the part of the chloride of calcium, affords the data for calculating the proportion of hydrogen in the compound; for water contains exactly $\frac{1}{9}$ of its weight of hydrogen. There are two ways of estimating the quantity of carbonic acid; by collecting the whole gases given off during the operation over mercury, and then condensing the carbonic acid by means of caustic potash, and judging of its quantity from the amount of condensation. The process takes place, of course, in graduated vessels. But the newer, and the better way of estimating the carbonic acid, is by forcing the gases evolved to bubble through a solution of caustic potash, and the amount of carbonic acid is determined by the increase in weight which this solution has attained. Carbonic acid contains 27·64. p. c. of carbon. By these means, then, the content of the substance in carbon and hydrogen has been determined, and if there be no other constituent, it is obvious that the two quantities thus obtained, must together give a sum equal to the quantity consumed in the analysis. Many oils and other bodies contain besides carbon and hydrogen no other constituent. If the substance analysed contained besides those only oxygen, the quantity of this element is obtained by subtracting the sum afforded, by adding together the two quantities of carbon and hydrogen, from the whole weight of substance used. Thus, if the weight used be 10 grs. and it be found, by experiment and calculation, that the carbon and hydrogen together, amount to 8 grs., the oxygen is then 2 grs. in ten, or 20 p. c. If the substance contain nitrogen, its quantity must be added to that of the carbon and hydrogen, and then the sum subtracted from the whole weight used to ascertain the amount of oxygen.

The particular mode of procedure, in analysing a substance that does not contain nitrogen, is briefly this: a quantity, varying from three to twelve grains of the substance in fine powder, and perfectly dry, is well mixed with recently ignited oxide of copper. The mixture is introduced into a tube about 12 inches long, and $\frac{1}{2}$ an inch wide. This tube must be of good potash glass, which does not fuse readily. It is sealed at one end, at the other it is stopped with a sound dry cork, into which passes a narrow tube, for conducting the evolved gases and vapours, through a bulb filled with pieces of chloride of calcium, to absorb the water. A small tube of caoutchouc connects this bulb with an apparatus destined to collect the carbonic acid. This apparatus consists of five bulbs, into which is introduced the liquid caustic potash. The construction and disposition of those parts will be easily understood.

The furnace is of malleable iron, and has slits at the bottom for allowing a supply of air; the combustible used is charcoal. The chloride of calcium and caustic potash apparatus, having been weighed before and after the combustion, the increase in weight of the different parts, afford the data for calculating the composition of the substance submitted to analysis. The above process is used for determining the carbon, hydrogen, and oxygen of all organic substances, as well of those which contain nitrogen, as of those which do not. But when nitrogen is present, another process is superadded to the above, for the purpose of obtaining the nitrogen in a state of purity. There are two modes of doing this; they resemble each other in the substance being mixed and burned with oxide of copper, as has been before described, but differ in the modes pursued for determining the nitrogen. One consists in obtaining the gas pure by exhausting the apparatus of air, and causing the mixed carbonic acid and nitrogen gases to

pass through caustic potash, when the latter alone passes into a bell jar, where its amount is determined; some dispense with the exhaustion of the air, and receive the nitrogen in a bell jar containing some air, which stands inverted over mercury. The addition of gas in this bell jar after the combustion, indicates the proportion of nitrogen in the compound. The other mode consists in collecting the mixed carbonic acid and nitrogen gases, in several narrow graduated tubes, and successively examining those for their relative proportion of the two gases. This is done by adding to each of them a little caustic potash, which absorbs the carbonic acid and leaves the nitrogen. The amount of carbon in the compound having been ascertained by a previous experiment, with the apparatus for this purpose before described, and the relative proportions of the carbonic acid and nitrogen being afforded by the present experiment, we have here all the data necessary for calculating the composition of the substance that has been submitted to analysis.

It has been with the help of the modes of analysis now described, that organic chemistry has made in the last ten years such immense progress. Without a correct and speedily-executed process for analysing the different substances as they occur in investigations in organic chemistry, it has been impossible to explore the vegetable and animal kingdoms in their chemical relations, as had been done, and is still doing. The present mode of analysis is all but perfect. It is in good hands; so accurate as in this respect to rival, indeed to surpass, the analytical processes of inorganic chemistry; and an analysis may often be commenced and ended within three hours.

ANATOMY, (*a.*) like every other branch of useful knowledge, has of late become a study of more general interest, and is not now confined, as formerly, to scientific and professional men. The numerous treatises that have been published on Natural Theology, Phrenology, Physiology, and Natural History, especially on the Physical History of man, and on Animal Mechanics, in conjunction with popular lectures on the structure and functions of animal life, have all contributed to awaken a laudable curiosity among almost every class of society, to become more thoroughly acquainted with the structure and composition of living animal bodies, and especially of the structure of the human body, and of those laws by which the animal economy is governed and directed in its progress from its conception to its birth, and from its birth till its death, or dissolution, as a living and animated being. From the short space, therefore, which was allotted to Anatomy in the body of the work, it is now certainly due to the spirit of the age, that we should present to the general reader a condensed, yet more extended, view of the present state of our knowledge of Human Anatomy.

A catalogue of the bones of the skeleton in their relative positions, with a plate presenting an anterior and posterior view of the hard parts, or pillars, of the human frame, accompanies the short history of the science to which we have alluded. The outer layer of muscles, or those brought into view when the body is stripped of its external envelopes, have likewise been enumerated, which if attentively examined and studied, in connection with the following sketch, and those other anatomical and physiological articles which have already found a place in the body of the work, and others to be met with in this Supplement, will, we have no doubt, tend to enhance the value of this publication, and furnish many an inquirer with a mass of anatomical and even physiological facts, which are seldom to be met with in works of this description.

The late revered Mr John Bell well observes, that it is a matter of little consequence at what point of the human body the anatomist begins to unfold its structure, so that he performs the route, and circumnavigates the whole. It has been common, however, to begin with osteology, or, in other words, the anatomy of the bones, then proceed to myology, or a description of the muscles. We should be at no difficulty to find arguments in favour of pursuing a different course; but as we are by no means partial to innovations, we shall follow the arrangement of that distinguished anatomist, Bichat, and observe the following order as the most simple analysis, or division of the body into its elementary parts, and the knowledge and adoption of which has been of the utmost importance, not only in the investigation and treatment of diseases, but has proved of the greatest convenience in anatomical arrangement. The principles upon which this order is founded, rests on the fact that the different organs which constitute the body, are of a more simple or complex structure, as they are made up of one or more *tissues* or textures, which are the original materials performing the same function, in whatever part of the body they exist. Even the solid parts of our fabric, when minutely examined, are found to consist ultimately of layers of minute fibres or filaments, varied in appearance and texture, according to the use and offices of the part they compose. It is likewise known that most of the organs of the body are composed of a variety of these elementary textures, and are spread out in the form of membranes, collected into cords or hollowed out into canals, and by their diversity of combination, figure and colour, they produce all the modifications of structure and functions which different organs possess. In adopting these views, we shall consider the systems of tissues or textures in the following order. 1. The bony system, including the medullary. 2. The cartilaginous, including the fibro-cartilaginous. 3. The fibrous. 4. The muscular. 5. The vascular, divided into the arterial, venous lymphatic, &c. 6. The nervous. 7. The mucous. 8. The serous. 9. The glandular. 10. Adipose. 11. The cellular. 12. The dermoid: Which twelve divisions will comprehend a general view of the whole animal structures.

As already stated, an enumeration of the bones, with their names, will be found under the article on anatomy, in the body of the work: we shall therefore, under this head, confine our attention to the General *Anatomy of Bone*, or *Osseous Substance*, which in the human body resembles the corresponding texture in the bodies of quadrupeds. The fabric of the *skeleton* alone, of which almost every person has a general notion, is sufficient to show the great variety of forms under which it exists. (See Anatomy, Plate III. vol. I). In some parts innumerable fibres or plates of it may be found nearly as fine as a hair, in others it occurs in solid pieces, fully half an inch thick. Its structure is exceedingly simple. If we divide it, and examine its surfaces with a common magnifying glass, or cut off slender films of it, and inspect them in a powerful microscope, it will appear to be a uni-

form substance without fibres, plates, or cells, penetrated every where by delicate blood vessels. Those vessels admit of being injected with size, or turpentine and vermillion, pretty freely; but from the opacity and hardness of the texture in its natural state, it is impossible to trace them with the eye, or by dissection, into its more interior parts. There is a very simple method, however, by which a piece of bone, after it has been minutely injected, may be rendered almost perfectly transparent, and then its blood vessels are displayed in the most beautiful manner. The method consists in steeping the piece of bone in dilute muriatic acid for a few hours, or days, or weeks, according to the thickness of the specimen, until it has become quite soft and pliable. It is then to be well washed, and after it has been gradually, but incompletely dried, it is to be plunged into spirit of turpentine. The instant it is immersed in this fluid, it becomes transparent, but the substance injected into the arteries retaining its colour and opacity, the most minute ramifications of these vessels are distinctly seen. There can be no doubt, that bone is also possessed of absorbents and nerves, but these have not yet been traced in it.

Any individual of ordinary intelligence and address, may, by the above and other more simple processes, satisfy themselves on many important facts in osteology. If, for example, we wish to demonstrate the substance of bone, which has been divided into three heads: *compact*, as in the bodies of the long bones, *spongy*, as in the extremity of the long bones, and reticular, called also the *cancelli*, as in the cavity of bones, which have marrow or medullary substance, we may proceed as follows:

Let a thigh bone be well boiled or macerated, and then let a perpendicular section be made, in other words, let the bone be sawn in two, and the three substances of bones will be very strikingly exhibited; the *compact* will be seen forming its external part, the spongy at the extremities, crowded with small cells, or as they are called by anatomists, *cancelli*, and the *reticulated* in its cavity, which forms a reservoir for the marrow. The *compact* substance is composed of many laminæ, or plates, composing a firm, hard substance, and these laminæ are easily distinguished in bones that have been partly exposed to calcination, or boiled for any length of time in a strong alkaline ley, or steeped in dilute muriatic acid. In man, and in other animals, these laminæ mostly separate on exposure to air, and hence the laminated portions, which frequently peel off, are called exfoliation in surgery. The fibres of the spongy and reticulated substance are extremely varied in their direction, and some variety occurs in this respect in the compact substance. Thus, in flat bones, as those of the head, they are disposed in the form of rays, and are seen converging from the circumference to the centre, while in the cylindrical bones they seem to be placed in parallel directions. The direction of the bony fibres, and all the above circumstances, are most satisfactorily demonstrated: 1. In the parietal bones of a fœtus which have been macerated, and cleared of the soft parts, as they exhibit very beautifully the radiated direction of the bony fibres: 2. By macerating a portion of the adult femur or thigh-bone from the body of the bone in dilute and muriatic acid, then separating with forceps or pincers, the laminæ: this simple manipulation will distinctly exhibit the laminæ of the bones; and, 3. The os femoris, or thigh bone of a slink calf, or a pig, if macerated, or boiled, and either kept in spirit, or dried, and then put in spirit of turpentine, will show the parallel direction of the bony fibres.

It is a remarkable fact, that the sulphuric, nitric, muriatic, and acetic acids, when properly diluted, all soften bone, and render it pliable, without its being possible to discover, by the most minute inspection, that a single particle of its substance has been removed. We have repeated this experiment many times, and on some of the most delicate portions of osseous substance in the body. The form and size of the slenderest fibre remains unaltered by the process, but our experience has convinced us that the muriatic acid is best adapted for the purpose. In proportion as the piece of bone becomes soft by this operation, it loses its yellow colour, and becomes bluish, or gray, approaching somewhat in appearance to cartilage. The very opposite effects are produced on osseous substances by heat. If a bit of bone be burned in a charcoal fire, of which the heat has been gradually raised to whiteness, and it be then carefully removed, and cooled very slowly, it will be found to have become exceedingly brittle, and of a pure white colour. Still not a particle of the substance will appear to have been destroyed. If the process have been carefully conducted, the bone will have precisely the same shape and dimensions as before.

Having thus shortly sketched the general structure and texture of bones, we shall briefly describe some of the other most prominent peculiarities of the osseous system. Bones, in respect to *form or figure*, have been divided into broad or flat, long and round, and cylindrical, and long, and irregular shaped bones; have been subdivided into a body, and extremities, and flat bones into body and margins. The long bones in general, belong to the parts of locomotion, where they become levers, moved in various directions by the muscles. The broad or flat bones are little connected with locomotion, serving chiefly for the insertion of muscles, which proceed to the long bones; the broad bones also form cavities, such as those of the skull and pelvis. There is another class of bones which, by some anatomists, have been denominated the short bones: these are situated in those parts in which solidity and motion must be united, as in the spine, the wrist, and the instep, where their number insures these two properties, namely, solidity and motion, because the force of external mechanical shocks expended on the wide surface by which they are connected, and because by their individual partial motions there results collectively a very extensive general one.

Bones, too, have been variously *named*, some from their situation, as the frontal, parietal, occipital, nasal, molar, &c., others from their figure, as the ethmoid bone, clavicle, naviculare, tibia, &c., and some from their use, as the sphenoid bone, the maxillary bone, the femur, &c. The *processes* and *cavities* are named from their figure, as the acetabulum, or cup-shaped cavity in the hip-bone, into which the head of the thigh bone is lodged, because this cavity bears a resemblance to the vinegar cup of the ancients; and from similar circumstances of resemblance to different objects, have many of the other processes and cavities of the body received their names; others again from their use, as the trochanters of the thigh bone, that large and smaller process at the bend of the head of the bone which

serves for the attachment of the capsular ligament, and the tendons of muscles, connected with the motion of the joint; and other processes from their *situation*, as the nasal palatine, and orbital processes. By bearing those explanations in mind, the student of anatomy will have less difficulty in comprehending the precise meaning of anatomical details, which, with all possible simplicity of language, is yet too frequently little better than unintelligible jargon, decked out in technical phrascology. If a process be large and of a spherical shape, such as the upper end of the thigh bone, or bone of the arm, it is termed sometimes the caput or head; if, on the contrary, the head or end of the bone is flattened, it takes the name of a condyle. Other processes are termed mastoid, or mamillary, from their resemblance to a nipple styloid; and coracoid, from their similitude to a stiletto, or the beak of a crow; some spinous, which appear like thorns; while others derive their names from their direction, as the longitudinal, perpendicular, horizontal, oblique, or transverse processes. A variety of *eminences* and *depressions*, to some of which we have now alluded, termed processes, spines, condyles, &c. characterise a number of the bones. There is one kind of eminence peculiar to bones, which deserves particular notice, which is called an *epiphysis*, and which should be distinguished from an apophysis. The latter is nothing more than a process, or head of a bone, but an epiphysis is a part of a bone connected to that bone, by an intervening cartilage, and of this, a beautiful demonstration may be seen every day in the thigh bone of a calf, or young pig, in which, when boiled, the epiphysis or head of the bone may be easily removed, and the part which adhered to the body of the bone will be found lined with cartilage; and thus the condyles of the thigh bone of a child are epiphysis, and are separable from the femur. In the course of time, however, the intervening cartilage assumes a bony character, a firm union takes place, and the epiphyses of the child become apophyses in the adult. Many other very interesting facts in osteology, may be learned from an attentive inspection of the bones of the inferior animals, a knowledge of which will amply repay the inquisitive for the time they may bestow on the subject. The eminences and depressions are observed to be most strongly marked, in those persons who take any active exercise, and in the male more than the female, and in the adult more than in the child. The eminences of articulation are generally the expanded extremities of bones, forming surfaces of union with other bones, in which there are corresponding depressions; but these will come to be noticed more particularly, when treating of the *joints*. Eminences and depressions, from apparent impression, are such as the irregularities of the inner surface of the skull, or such as muscular impressions on other bones present. They are supposed to be occasioned by the pressure of different organs on the surface in their growth or actions. If those are not actually the result of the compression of the organs on these bones, they show that the bones are provided with forms admirably accommodated to the adjacent parts. There are almost innumerable cavities on the exterior of bones, which are intended for the insertion of muscles, tendons, or ligaments, such irregularity of surface extending the fibrous attachment without increasing the diameter of the bone. There are other cavities which are destined to receive an organ and protect it, while there is a third class, for affording a gliding passage for tendons, and for the transmission of vessels and nerves, and for the two last, there are a multiplicity appearing, like small perforations in the bones in general, and in the extremities of the long bones in particular; a fact that will be more particularly noticed in a subsequent section.

It is scarcely possible to perceive any difference in the *osseous substance* of the *female* and that of the *male*.

In the fœtus and infant, the colour of bone is much redder than in the adult, and it becomes gradually paler as the individual approaches to maturity, and in the decline of life generally acquires a deeper tint of yellow. In point of consistence, it will be found to be softer, and more elastic, the younger; and harder, and more brittle, the older. Its specific gravity, too, almost invariably increases with the age of the individual. The vascularity of bone is much greater in early life than at maturity, and much less in old age, and to this, no doubt, in part the difference of its colour is owing.

With respect to the composition of bone, there is no texture of the body of which the chemical properties have been more frequently or more minutely investigated. The specific gravity of bones differs in different parts; that of adults' teeth is, according to Dr T. Thomson, 2·2727, that of children's teeth 2·0833. Bone, however, consists essentially of only two different substances; namely, a cartilaginous and earthy. Berzelius found the constitutents of human bone to be as follows—

| | Man. | Ox. |
|---|---|---|
| Cartilage | 33·30 | 35·5 |
| Soda, and common salt | 1·20 | 2·45 |
| Carbonate of lime | 11·30 | 3·85 |
| Phosphate of lime | 51·04 | 55·45 |
| Fluate of lime | 2·00 | 2·90 |
| Phosphate of magnesia | 1·16 | 2·05 |
| | 100·00 | 100·00 |

From these analyses, it appears that there is nearly the same proportion of cartilaginous substance in ox as in human bones, and almost the same proportion of the other principal constituent, the phosphate of lime, while the difference in the other constituents is more remarkable. In such diseases as caries of the bones, the phosphate of lime seems to be diminished, as appears from the analysis of a carious bone by Lassaigne.

| | |
|---|---|
| Animal matter | 40·5 |
| Carbonate of lime | 21·5 |
| Phosphate of lime | 38·0 |
| | 100·0 |

The bony part of the teeth, according to Berzelius, differs considerably in the proportion of its constituents from that of the other bones.

| | |
|---|---|
| Phosphate of lime | 61·95 |
| Fluate of lime | 2·10 |
| Carbonate of lime | 5·50 |
| Phosphate of magnesia | 1·05 |
| Soda, with a little muriate of soda | 1·40 |
| Gelatine water, &c. | 28·00 |
| | 100·00 |

With respect to chemical properties, it is sufficient to remark, that the quantity of calcareous matter contained in bone, proportionally to the cartilaginous part, is always greater the older the subject. This accounts for the difference in its specific gravity, hardness, and strength, at different periods of life, and in part also for the difference

of its colour, facts which should ever be remembered by the practical surgeon in his treatment of fractures. As our general anatomy of the bony system would appear imperfect without noticing those useful, but often ill-treated servants, the *teeth*, we refer to the article *Teeth*, in the *Encyclopedia*, for a description of the most prominent and peculiar characteristics of their organization, arrangement, and forms.

Having now completed our short, but we flatter ourselves comprehensive, sketch of the *general anatomy of the bony or osseous* system, we shall next attempt a brief topographical description of the human skeleton, referring to *Anatomy, Plate III. in the first volume of the Encyclopedia*, for a more correct representation of the relative connections, shape, and size, of such bones as are brought fully into view in the anterior and posterior aspects in which the skeleton is figured in the plate.

Anatomists have been accustomed to divide the skeleton into the head, trunk, and extremities, and the extremities have been again subdivided into the upper and lower. Before, however, entering into particular details, it is necessary to observe, that all the descriptions in this article are to be considered as applicable to the *adult male*, unless when the contrary is expressly specified.

To regulate the interpretation of the terms *anterior*, *posterior*, *lateral*, *above*, *below*, *before*, *behind*, &c. we shall uniformly suppose the body to be in the erect posture, with the arms hanging parallel to the trunk, and the palms of the hands and toes turned directly forwards. This is the simple remedy, and the only effectual one, for the trifling ambiguity which might otherwise attend the use of these terms. For example: by *superior* and *inferior* is signified higher and lower, with respect to the erect position. By *anterior* and *posterior* is denoted the situation of the parts, as nearer to the surface or hinder surface of the body, and by *laterally* is to be understood that the parts so described approach the one side or the other. *Inner*, and *outer*, and *external*, and *internal*, express the situation of any given part or portion of the body, or of an imaginary plane bisecting the body into lateral halves, passing through the head and trunk, and continued between the lower extremities.

The *Head.* The united assemblage of bones which compose the head are called the *skull*, which comprehends the bones of the cranium and face, twenty-two in number, in which enumeration the teeth are not included. Some of the bones are in pairs, and others are only single bones. The *adult cranium*, strictly so called, only consists of eight bones. These are the os frontis, or frontal bone, (Plate III. fig. 1. No. 1.) which forms the forehead part of the temples, and the roof of the orbits, and its shape has been compared to a cockle or clam shell.

The os frontis is very smooth, and convex externally where it forms the forehead, but below, where it assists in forming the orbit, it affords several processes and cavities. Its inner surface is concave, and is turned towards the brain, and in the centre of its inferior part is the ethmoid bone, which is placed at the top of the cavity of the nostrils. It sometimes consists of two portions, in consequence of the saggital suture being continued down through its middle, to the nose. This, however, is more frequent in females than in males.

There are several well marked *processes*, or *eminences*, both external and internal, the most important of which are the two *frontal eminences*, which mark the centre of ossification; two *frontal tuberosities*, situated over the frontal sinuses, and two superciliary ridges, or arches, which give origin to the frontal muscles, and whose extremities are called the angular or orbitar processes, and behind such external angular processes the surface of the bone is considerably depressed for the situation of a part of the temporal muscle. There is, likewise, an *external frontal spine*, upon which the ossa nasi rest, an internal frontal spine, to which the dura mater adheres, and two orbitar plates which separate the orbits from the cavity of the cranium.

This bone, which constitutes the forehead, the pituitary, or frontal sinuses part of the orbit, and contains and defends the anterior lobe of the brain, is *joined or connected*, above or behind, with the ossa parietalia, which junction terminates at a line running horizontally backwards, from the point of the angular process, between these two points, and behind as far as the ethmoid notch; it joins with the sphenoid bone on each side within the ethmoid notch; it receives the ethmoid bone, which joins to the orbitar plates, at the inferior part of which it unites with the ossa lachrymalia; in front it joins its nasal process and spine with the ossa nasi and ethmoid bone, and with its outer angular processes with the malar bones.

In this bone there are several well defined hollows, or cavities, and holes, or foramina, which all serve either to lodge important organs, or afford a passage for blood vessels, nerves, &c.

One of the most interesting of these are the frontal or pituitary sinuses, or cavities, within the bone above the root of the nose; they are separated by a thin bony partition, and open, by two small holes, into the nostrils, of which they form a part, and their internal lining is frequently thickened and inflamed in cases of common cold, along with the internal lining of the nasal cavity, and produces that stuffing and dryness of the parts which is so very disagreeable, a symptom when suffering from the effects of cold. It is indispensibly necessary for the surgeon to be well acquainted with these sinuses, and with others not less important in this bone, especially that of the dura mater, as they should be cautiously avoided when performing the operation of trepanning. Substances have been forced immediately over the internal angle of the orbit, some way into the skull, and never produced any symptoms common to injuries of the brain, and when removed it has been ascertained that these substances were in the *frontal sinuses.*

There are three pairs of muscles attached to the os frontis, viz. the *temporal*, *corrugator supercilii*, and *orbicularis palpebrarum;* it is also covered by the *occipito frontalis.* In the new born infant, the os frontis consists of two portions. The superciliary arches and orbitar plates are distinctly formed, and sometimes the frontal sinuses.

*Ossa parietalia*, or parietal bones, (Plate III. fig. 2. No. 1.) This pair of bones forms the sides and vertex, or top of the head, and are joined by their frontal edge to the os frontis, by the parietal edge to its fellow, by its occipital edge to the os occipitis, and by the tempero sphenoidal edge to the temporal and sphenoid bones. The parietal bones form the superior part of the cranium, and have several *eminen-*

*ces* and *cavities*, having a considerably convex and somewhat quadrangular shape. There is a semi-circular ridge, from which the temporal muscle originates, and the foramen parietale, which is near the sagittal suture, and transmits an artery and a vein to the dura mater. Upon its internal surface are the grooves of the spinous artery, and when the two bones are united, there is a deep cavity extending along the sagittal suture, for the longitudinal sinus of the dura mater. The connexion of these bones with the os frontis, claims more particular notice than it often receives. In the middle of the coronal suture, where the frontal bone, from its size and flatness, stands most in danger of being injured, it rests upon the arch formed by the parietal bones, whereas, at the sides, the parietal bones rest upon the os frontis, because the same arch is there in the greatest danger from pressure. The surgical anatomy of the parietal bones is very essential, especially a correct knowledge of the situation of the parietal foramen, for when the artery which passes through it is divided, it sometimes bleeds very profusely, and being embedded, and somewhat retracted on the foramen, cannot be secured by a ligature. These bones, at birth, consist of one portion, and partake of the shape of the adult bone, affording a very beautiful exhibition of the radiated bony fibres, and the centre of ossification.

One muscle only, viz., the *temporal*, is attached to the parietal bone.

The *os occipitis*, or occipital bone, (Plate III. fig. 2. No. 4.) is situated at the back of the head, forming part of the base of the skull, and is somewhat of a quadrate oblong shape. Its external surface is convex, and very irregular, serving for the attachment of various muscles. The inferior portion is stretched forwards like a wedge, and at the base of this projecting portion are two condyles, or rounded eminences, which serve for the articulation of the head with the first vertebra of the neck. There are numerous *processes* on its external surface, and one upon the internal surface—an *internal crucial spine*, the superior branch of which gives adhesion to the longitudinal sinus of the dura mater, the two lateral to the lateral sinuses, and the inferior to the septum cerebelli.

There are likewise several *cavities* and *depressions*, but the most remarkable circumstance connected with this bone, which deserves special notice, is the great opening or hole, technically the *foramen magnum occipitale*, through which the spinal marrow proceeds into the spine and the vertebral arteries and accessory spinal nerves into the cranium. There are also two anterior condyloid foramina, or openings for the passage of the lingual pair of nerves, two posterior foramina of the same kind for the passage of the occipital vein into the lateral sinus (which are sometimes wanting.) There are two *notches*, which with two corresponding notches of the temporal bone, form another foramen in the base of the cranium, for the passage of the blood from the lateral sinuses into the jugular vein, and the exit of the *parvagum* or eight pair of nerves; and a considerable *groove* leads to the above notches in which the lateral sinuses are situated. The internal surface has also four considerable *depressions*, formed by the *crucial spine* we have noticed, and the two superior contain the posterior lobes of the brain; and the two inferior, the two lobes of the cerebellum.

"Man being designed (as Dr Hooper pertinently remarks) for an erect posture, the foramen magnum occipitale (or *great opening* we have already alluded to,) is placed nearly in the basis of the human cranium, at almost an equal distance from the posterior part of the occiput and the anterior part of the lower jaw, whereas in quadrupeds it is nearer the back part of the occiput." This extraordinary bone is connected with the sphenoid bone, the two parietal and two temporal bones; and with the first vertebræ of the neck by ginglymus, or a hinge-like articulation: and to the second by syndesmosis, or by means of ligaments.

We have been more full and particular in our description of this bone than perhaps our limits justify, because we consider it to be one of the most wonderful among the many contrivances of the human body, in which the adaptation of means to an end are so admirably displayed, that it might form in itself subject sufficient for another Bridgewater Treatise. It not only constitutes the posterior and inferior part of the cranium, but contains the posterior lobes of the brain, the cerebellum and medulla oblongata, or upper part of the spinal cord, and has been said (and we think with some justice) to be the *sensorium commune*, the organ of all the senses: but yet, in addition to these important offices, the occipital bone also serves for the articulation of the head with the spine, forming by far the most important joint of the human body. This subject will, however, be further noticed in the section on the spine and vertebræ.

Again, if we except the petrous portion of the temporal bone, the occipital will be found much stronger than any bone of the head. The reasons for this are sufficiently obvious, even to the most thoughtless observer, as the occiput has to defend the cerebellum, the least injury of which proves fatal, and perhaps also because it is more liable to be fractured, being, from its situation, less defended than the other bones. For example, when we fall forward, the hands naturally protect us; and if on one side, the shoulders greatly defend the head: but when a person falls backwards, the hind part of the head comes with considerable force against the earth; and if the fall is against a stone, or other hard substance, the bone is either fractured or knocked in, and presses upon the brain. In the course of our practice, we have known several instances of the kind. One in particular of a young man about thirty, a type-founder in Edinburgh, whose feet slipped from below him in coming out of a door, on the steps of which was some ice: in falling, his hat flew off and he fell heavily, his head striking with great violence against the stone steps. He died in about twelve hours after, and on opening the head after death, the occipital bone was found to have been beaten in. Its union with the parietal and temporal bones, by the lambdoidal suture, was loosened, and although not depressed more than two lines of an inch, the surface of the brain was covered with a cake of extravasated blood.

This bone, at birth, is formed of four portions, joined together by cartilages, an arrangement designed to facilitate child-birth, or render child labour less difficult and dangerous. The older anatomists justly attached great importance to this bone, which was by some denominated the *os memoriæ*, or bone that contained or defended the organ of memory; and by others, the *os nervosum*, because it lodged or defended the chief, or most valuable part or portion, of the nervous mass. It was also called

*os basilare*, and we cannot omit this opportunity of directing the attention of all who feel anxious to become acquainted with animal mechanism, to study carefully the structure, connections, and uses of this bone, to which there are not fewer than ten pairs of muscles attached.

The *Os Sphenoidum*, or sphenoid bone, (No. 3. fig. 1.) It is situated in the middle of the basis of the cranium, extending underneath from one temple across to the other; its figure is very irregular, and has been compared to a bat with its wings extended. This bone, at birth, consists of five portions, joined together by strong cartilages. Its connections are very varied and extensive, being connected with all the bones of the head, and it furnishes an example of no less than three kinds of union. This bone serves to form the basis of the cranium, and concurs in forming the orbits, the pituitary sinuses of the nose, the temples, &c. and to contain the middle lobes of the brain.

The *Ossa Temporalia* or *Temporal Bones*, (No. 5. fig. 1.) are situated at the sides and inferior part of the cranium, having an irregular figure, and each divided into two portions: a *squamous portion*, which is flat, and forms the squamous suture, and a part of the side of the cranium; and a *petrous portion*, sometimes termed the *os petrosum*, which is very irregular, and is situated at the basis of the skull. It is a hard, craggy protuberance, nearly of a triangular shape, and surrounds the organ of hearing, (which is contained within the temporal bones;) and below this petrous portion is a concave angular projecting portion, which forms a part of the lambdoidal suture. The temporal bone has numerous processes, giving attachments to muscles and tendons, &c. the most important of which are the *auditory process*, or outer bony circle of the outer bony passage, to which the membrana tympani, and cartilage of the ear, are fixed. As there is an anatomical description of the ear in the Encyclopedia, illustrated by a cut, we have great pleasure in referring to that article. (See *Ear*.) Each temporal bone is *connected* with, or united to, the parietal, occipital, and sphenoid bones, and with the lower jaw. The *substance* of these bones requires a little notice, as the squamous portion consists of two tables and a diploe. The mammary process of cells which communicate with the cavity of the organ of hearing, and the petrous portion is very hard and compact.

The temporal bone, at birth, consists of three portions, the squamous and petrous, already noticed, and a *ringlike bone*, which surrounds the opening of the tympanum, or drum, of the ear. The last bone is seen completely ossified at the fourth month after conception: it is not a ring, though termed *annulus osseous*, for its ends do not meet. After birth, this portion is gradually elongated to form the *meatus auditorius externus*, or the canal or tube which is terminated by a membrane of the tympanum, and it is within the petrous portion that the organ of hearing is situated, which is perfectly formed at birth.

These bones, with the sphenoid, unite as a covering for the middle lobe of the brain, and, as already stated, afford accommodation to the organ of hearing, and also concur in forming the temples and basis of the cranium. A thorough acquaintance with the anatomy of the temporal bones is indispensible to the practical surgeon, particularly its cavities, furrows, canals, tubes, &c., as it not only contains the *carotid canal* for the passage of the chief artery of the brain, but likewise affords passage for the portio dura of the seventh pair of nerves, with other portions of the nervous system, as well as the internal *auditory passage*, by which the nerves of hearing have access from the brain to the ear with the aqueduct of the cochlea, which serves for the entrance and exit of the blood vessels of the ear, and an entrance and exit for the internal jugular vein, &c. The temporal bones are likewise very liable to be destroyed by venereal caries, and we have oftener than once seen the whole of the bone rendered worse than useless by this destructive affection, and even the bony parietes of the tympanum of the ear have been sometimes almost altogether annihilated by caries from common abscesses, which most frequently occurs in scrofulous habits. An operation used to be performed on the mastoid process of these bones, to remedy deafness, which consisted in removing a portion of the bone by an instrument of the trephine kind, and forming a communication with the external air through the mastoid cells with the cavity of the tympanum. Another operation, more simple and more certain, is perforating the membrana tympani. The artery which luxuriates on the external covering of the temporal bone, is frequently opened in cases of inflammation of the brain, and its course will be seen accurately delineated in Plate LXXXVI. fig. 4. of Surgery. See *Surgery* in the Encyclopedia.

The *os Ethmoideum*, or *Ethmoid bone*, is situated on the anterior part of the basis of the skull, behind the root of the nose, and between the orbits, and cannot be seen in any of the figures. It is united to the frontal, the two nasal, the two superior maxillary, the palatine, the sphenoid, and the vomer, by harmony, thus having a connection with not fewer than nine of the surrounding bones. It constitutes a part of the nose, orbits, and cranium, and forms an extensive surface for the organ of smell. The ethmoid bone has a number of processes, one of these is a *cerebral* or *cribriform plate*, which lies horizontal above the root of the nose, within the cavity of the cranium; it is everywhere perforated by a number of small holes, or foramina, through which the olfactory nerves pass into the cavity of the nostrils. Another is the *crista galli*, a process somewhat like a cock's comb, which proceeds upwards from the middle of the cribriform plate, and has attached to it the falciform process of the dura mater. There are a few other processes, but they are seldom noticed in practical works, either on medicine or surgery.

At birth, this bone is mostly cartilaginous; part of the ethmoid septum consists, however, of bony matter, and the superior turbinated bones are occasionally found ossified. This bone is frequently the seat of that destructive disease caries, of which either syphilis, or its mode of cure, or part of both, are most generally the producing causes. In these cases, the bone comes away by small portions, if not timely checked; but caries, and even complete destruction of the bone, has also arisen from tumors of the dura mater, and polypi in the nose.

There are no muscles attached to, or covering, the ethmoid bone.

The *Wormian, or Triangular Bones*, are irregular bones, which are sometimes found in the course of the suture, formed by the parietal and occipital bones. They are not constant, and received the name of a Spanish anatomist, who first described them.

Having described the eight bones of the skull, and shortly noticed the ossa Worminna, or, as they are sometimes denominated, the *Ossa Triquetra*, it may not be out of place to allude more particularly to two remarkable openings in the connected bones of the cranium at the base, before we enter on a description of the bones of the face. These openings are a foramen, already noticed, for the entrance of the carotid artery, formed by an interval between the sphenoid and temporal bones, called the *anterior lacerated* foramen, the other between the temporal and occipital bones, the *posterior lacerated foramen*, or as in our description of the occipital bones, the *foramina lacera*, &c. Through this foramen the blood is poured from the lateral sinus of the brain, into the jugular vein. In the same locality, we may also observe the several cavities for supporting the lobes of the brain, but these astonishing structures, with the channels for the sinuses, &c. will be better understood after the reader or the student has become somewhat familiar with the anatomy of the brain. While alluding to these wonderful contrivances, with which every professional man should be especially familiar, we cannot omit this opportunity of recommending to the professional student two most invaluable works on this part of the human frame, viz. "Observations on the Surgical Anatomy of the Head and Neck, by the late Allan Burns," and "Illustrations of Surgical Anatomy, founded on the work of M. Blandin, by J. G. M. Burt." These books should find a place in the library of every practical surgeon.

Bones of the Face. The bones of the face are, with the exception of two, in pairs, and have been estimated as consisting of those of the upper and lower jaw. They are said, by some, to be united by what is called sutures, and named according to their connection with each other, but they are connected rather by simple, irregular lines, or as some of the older anatomists would say, by harmony, a term employed to denote a species of immovable connection of bones, in which their edges fit accurately together. The upper jaw is represented as formed of thirteen bones, viz., two superior maxillary, two nasal, two palatine, two malar, two inferior spongy, two lachrymal, and the vomer, which are connected to the cranium, and with one another, by harmony, or in the way already described. The under jaw consists only of one bone, and is the largest bone in the face.

Beginning at the external angle of the orbit, where the frontal bone is united to the cheek-bone, there is a visible *line*, which leads to the inferior opening in the orbit, proceeds upwards to the nose, whose root it crosses, and then traverses the other orbit to the external angle, and this line has been called the *transverse suture*. The other harmonies, or sutures of the face, are named after the bones which they unite, as the zygomatic, nasal, palatine harmonies, &c., and in shortly describing each of these individual bones, it is a matter of little consequence what arrangement is followed.

*Ossa Nasi, or Nasal bones.* (No. 8. fig. 1.) These bones form the bridge and external part of the nose, and each is connected with its fellows and the superior maxillary bone by harmony, and with the frontal and ethmoid by the transverse suture. Like most of their associates, these bones are perfectly formed at birth: at that early period, however, they are, like the other bones, soft and yielding, and many savage tribes compress the nose immediately after birth, conceiving a broad nose conducive to beauty.

The nasal bones are convex externally, thereby giving greater resistance to violence from without, and concave internally, to afford an ample cavity for the nose at their middle part; each presents a small foramen or hole, which passes through the bone, and transmits blood vessels and nerves to the pituitary membrane. There are two muscles attached to the nasal bone; the *occipito frontalis*, and *compressor naris*. The *ossa lachrymalia, or lachrymal bones*, are not to be seen in either view of the skeleton, but are two flat quadrangular bones, somewhat resembling the nail of the finger, situated one in each orbit at the internal angle, and separating the orbit from the nostrils. Each bone is connected with the frontal ethmoid, superior maxillary, and inferior spongy bone, by harmony. The surface towards the eye is concave, and has a *fossa* or groove, in which the lachrymal sac is situated. The internal surface is convex, and covers some of the ethmoid cells, and part of the nostrils. These bones, like the ossa nasi, are completely formed at birth, and they assist in covering the labyrinth of the nose, in forming the orbit, and in affording a situation to the lachrymal sac. Although the following more particular description of this sac, and its uses, is not strictly osteological, we offer no apology for noticing it in this place, as it is not alluded to in the very excellent article on the *Eye*, in the Encyclopedia. There is a small, red, fleshy point, called the *Puncta Lachrymalia*, or two small orifices, one of which is seen at the end of each eyelid, near the nose. From these openings, a canal goes downwards, and inwards, and meeting about half an inch from their origin, forms a sac, or lining, to the little cavity formed in the lachrymal bone, which is called the lachrymal sac, and is continued downwards into the nose, and thus conveys the tears from the inner corner of the eye into the nose. There is, moreover, a hard conglobate gland, of an oval form, called the *Lachrymal gland*, which has a number of excretory ducts, which convey the tears secreted by this gland on the surface of the eye, and any superabundance of the tears are absorbed, or taken up by the Puncta Lachrymalis, and conveyed through the sac and canal above described, into the nose, and pass off with the excretions of that organ. The lachrymal bones are perforated obliquely downwards, in the operation for fistula lachrymalis, in order that the tears may be conveyed into the nostrils, as by accumulating on the surface of the eye that organ would be rendered comparatively useless, from the great effusion of watery fluid on its surface. This kind of fistula is likewise not unfrequently followed by caries, or destruction of the bone. It will therefore be apparent to every reader, that these very small and obscure bones, sometimes called the *os unguis*, are the locality of very important organs in the human body.

*Ossa Malarum*, or *Cheek Bones* (No. 7. fig. 1.) These bones are sometimes called *ossa jugalia*, or jugal bones, and by others *ossa zygomatica*. They are united to the frontal, superior, maxillary, sphenoid, and temporal bone by sutures, and as every one knows, are situated at the sides of the face, and are nearly of a quadrangular shape. Each of these bones has five processes; an *upper orbitary*, forming part of the orbit, and the sharp edge of the temple; *inferior orbitary* opposite to the former, and constituting, in part, the bottom of the

orbit and edge of the cheek; the *internal orbitary*, which also forms a part of the orhit; the *maxillary*, by which it is joined to the superior maxillary hone, and the *zygomatic process*, which is joined to the temporal bone, to form the zygoma or cavity under the zygomatic process of that hone transmitting the tendon of the temporal muscle like a yoke; and hence its name. Every part of the cheek bones is formed at hirth, but the shape is rather more than triangular, and hecomes gradually changed. Four muscles are attached; the *obliquus*, *inferior oculi*, *zygomaticus*, *major and minor masseter*, while the *orbicularis palpebrarum* covers it.

*Ossa Maxillaria Superiora*, or *the Upper Jaw Bones*, (No. 9. fig. 1.) The superior maxillary hone, at birth, consists of one portion, so that every process and cavity can he seen, hut not so perfect as in the adult, where the superior maxillary consists of two hollow hones, situated in the anterior and middle part of the face, which assist in forming the nose, orhit and palate, so that their shape is very irregular. Each of the superior maxillary bones is connected with its fellow, with the os frontis, one os nasi, one lachrymal bone, the ethmoid sphenoid, one os jugale, or cheek hone, one palatine bone, and one inferior spongy bone, by harmony, and hy the vomer, and hoth hy gomphosis, a species of union already explained. The chief offices or uses of these hones, are to form part of the face, palate, nose, nostrils, and orhits, and to afford a convenient situation for the organ of mastication. The processes and cavities of these hones are numerous, hut as no practical purpose could he served hy their enumeration, in a work of this description, we do not attempt the task. There are, however, usually eight alveolar cavities in each bone, to receive the teeth, that is, in all sixteen, in the upper jaw, which is formed of these bones. There is also a cavity, the antrum maxillare, called also the *antrum Highmore*, in the hody of the hone, hetween the orbital and palatine processes, which has an opening into the nostrils, and which is frequently the seat of disease, and therefore requires a more particular notice. An abscess forms in this antrum of Highmore, (the anatomist who first described it); and as it is necessary to perform an operation, to give exit to the pus or matter, a trocar must he introduced, and if the first of the molar teeth under the affected antrum he under its socket, the operation must he varied. These hones are suhject to caries, from disease in the antrum, or cavity, and likewise from polypus, and it is not an unfrequent occurrence for nearly the whole hone to come away from the venereal disease, and also from a long continued salivation. In warm climates, flies have heen known to deposit their ova, or eggs, in the nose, and in this antrum, where they soon become flies, which irritate the lining membrane, and induce inflammation and abscess, which must he evacuated by means of a trocar, or as a common abscess, from any other cause. There are no less than ten muscles attached to this hone, all connected with the face and motions of the jaws and mouth, which need not he enumerated by name.

*Ossa Palatina*, or *Palatine Bones*, which, from their situation, cannot he seen in the plate. Each of these hones is united to its fellows, to the superior maxillary bone, the sphenoid, ethmoid, inferior spongy bone, and hones hy harmony, and from the posterior part of the palate, and part of the nose and orbit. They are extremely irregular in their shape, and ascend laterally from the posterior part of the nose to the orhits. This irregularity of their figure, and their situation, has given rise to their division into four portions, and they have also the same number of processes, taking their names from those of the portions, viz. the *palatal*, *pterygoid*, *nasal*, and *orbitary*. The palatine hones are very perfectly formed at hirth, and five muscles are attached to, or connected with, these hones. The palatine portions, or palatal plate, are extremely suhject to caries from syphilis, and those who can afford it, have a suhstitute in the form of a gold or silver palate.

*Vomer*. The vomer, at birth, consists of two distinct lamellæ, with an intervening cartilage. Superiorly, it is united with the sphenoid and the ethmoid bones, inferiorly with the superior maxillary and palatine hones, and anteriorly to the cartilaginous septum of the nose; its office heing to sustain and divide the cavity of the nostrils. It hears some resemblance to the plough share of former times; and hence its name, which is derived from *vomo*, to turn. It is, like its more immediate neighhours, very liahle to caries.

*Ossa Turbinata*, or *Turbinated bones*, sometimes called the inferior spongy hones, are each united with the inferior maxillary; the palate lachrymal and ethmoid hone heing situated in the side and lower parts of the nostrils, are of a spiral and convulated figure. and augment the surface of the organ of smell. They are particularly subject not only to caries, hut to total destruction from syphilis and nasal polypi.

*Os Maxillare Inferius, or Lower Jaw Bone* (No. 10. fig. 1.) The lower jaw bone is united to the temporal hones hy ginglymus, with the teeth hy gomphosis, and with the os hyoides, or hone of the tongue, and other parts, hy syssarcosis, or hy means of muscle. It is shaped somewhat like a horse shoe, and occupies the inferior and anterior part of the face. It serves many very important purposes, giving place to the roots of the teeth, in the alveolar margin, constituting the inferior segment of the cavity of the mouth, and affording a point of adhesion to the muscles of the face, neck, larynx, and tongue, there heing not less than twelve pair of muscles attached, hoth externally and internally, while one passes over it. The most important of these is the temporal muscle, which occupies the whole temporal cavity, and terminates inferiorly in a strong tendon, which is attached or inserted into the coronoid, or crow's heak like process of the inferior maxilla. Those who have a taste for animal mechanics, will find their curiosity, lahour, and study, sufficiently rewarded hy an attentive inspection of the connections of this hone. The ginglymus joint is formed hy the large articular cavity of the temporal bone, receiving the condyloid, or rounded process of the lower jaw. In this joint there is a movahle *inter articular cartilage*, which is very closely connected to the condyloid process, and the articular cavity hy ligaments arising from their edges, and the whole is surrounded hy a capsular ligament, fixed to the temporal bone and the neck of the condyle. The peculiar formation of this joint gives to the lower jaw many motions; thus, when the condyles or rounded ends slide forwards, the lower jaw passes horizontally forwards, as in the action of hiting, or the condyles only may be brought forwards while the rest of the jaw passes hackwards, as is the case when the mouth is open. The condyles may also

slide alternately backwards and forwards, and *vice versa*, so that while one condyle advances, the other moves backwards, turning the body of the jaw from side to side, as in grinding the teeth. The inter articular cartilages are evidently designed for facilitating the movements of the articulation, by adapting themselves to the different inequalities in these several motions of the jaws, and for preventing any injuries from friction. This joint, however well secured, is occasionally dislocated in yawning, (*Scottice*, gaunting,) and by other causes: when so, the patient's countenance assumes a truly ludicrous appearance, and without great care, the operator who reduces the luxation, is almost certain to have his fingers bit.

Our limits forbid us noticing the numerous *processes* and cavities; suffice it, however, to state, that at birth, the lower jaw bone consists of two pieces, which meet at the symphysis, or middle of the chin, the symphysis being a species of bony connection, which means growing together.

This bone has been removed by a surgical operation; the whole bone has also in some cases been so much destroyed by necrosis, as to drop out, and more frequently portions have been separated. This has been in some cases produced by the long continued and improper use of mercury, especially when carried the length of salivation, and an abscess destroying the nutritious artery of the bone, has occasioned portions to exfoliate. The efforts of nature to restore these losses, is frequently astonishing, the place of both the bone, and teeth which it contained, being supplied by a hard or firm body of bone capable of performing the office of both.

*The Cavities Formed by the Bones of the Face and Cranium* yet require to be noticed, and these are, orbits, nostrils, and mouth, in the which are the teeth, (which have been already described,) the fauces, in the anterior part of which is the os hyoides, and the cavity of hearing, situated in the temporal bone; all of which have been mentioned in the preceding sketch, and therefore only require to be shortly noticed.

Under the forehead and on each side of the root of the nose, are situated two conoidal cavities, which are called the *Orbits*, and in these there are other smaller cavities, or depressions, which serve as lodging apartments for some apparently insignificant but important organs, such as the lachrymal gland, the lachrymal sac, a passage for the tears, &c. Seven bones enter into the structure of each of these orbits, viz. the frontal, maxillary, jugal, lachrymal, ethmoid, palatine and sphenoid; these serve the important purposes of lodging and defending the organ of sight, and its adjacent parts. The situation of the *Nostrils* need not be described, as they are well known to every individual. They are composed of fourteen bones, the names of which need not be enumerated, as all of them have been already described. The nostrils are furnished with several cavities and foramina, or holes, three pair of *pituitary sinuses*, viz. the frontal, sphenoid and maxillary, the caverns of the ethmoid labyrinth, the anterior foramen of the nostrils, the nasal duct, the spheno palatine foramen, and the anterior palatine foramen. The nostrils are designed doubtless to form a situation for the organs of smell, and their pituitary membranes, as well as to serve for speech and respiration.

The *Mouth* is covered laterally and anteriorly in the living body, by the cheeks and lips, and posteriorly it is continued into the fauces; the two superior maxillary bones and the palatine portions of the palate bones, forming, on its superior part, which is anteriorly closed by the teeth, already described.

The *Fauces*, or rather the cavity of the fauces, is situated under the basis of the cranium, within the superior bodies of the vertebræ and posterior part of the nostrils, and is composed of ten bones, all of which have been described, with the exception of the os hyoides. This cavity gives locality to the fauces, larynx, pharynx, and os hyoides.

*Os Hyoides*, or *Os Linguale*, or the *Tongue Bone*, is not immediately connected with any other bone, but is kept in its situation by numerous muscles and ligaments, there being no less than ten muscles attached to this small bone, which is located in the fauces, between the basis of the tongue and the larynx. It is connected to the styloid process of the temporal bone, the scapulæ or blade bone, the lower jaw, and sternum, or breast bone, by the various muscles, and with the larynx by ligament.

The only other bony cavity formed by the bones of the face and cranium is the *Ear*, for a description and plate of which we have already referred to the article *Ear* in the Encyclopedia. Suffice it here to state, that in the fœtus, or new-born child, the squamous and petrous portions of the temporal bone, in the latter of which the organ of hearing is situated, are divided by a cartilaginous substance. In consequence of the bony fibres being more delicate than in the adult, very beautiful preparations of the bony organ of hearing can be made, well calculated to reward all the trouble and toil of a juvenile anatomist, and to strike the mind with astonishment at the simple, but beautiful, organization of the human ear.

Having now briefly described the bones of the cranium, and face, and some of their uses, and also noticed the various cavities and their contents, we shall now take a general view of the whole structure, external and internal.

Looking at the heads of different nations, and even at the heads of different individuals in the same nation, we find a very great variety in shape, not only in the bony cranium, but in the living head, with all its membranous muscular integuments and hairy envelopes. It is only, however, with the bare bony cranium, that we have now to do. In the generality of Europeans, the shape is oblong; in the Turk and Algerine, it is round; and in the Chinese and Tartar, it is broad. The cranium of the African is flattened on the forehead, and the teeth and chin are extended forward. The shape of the head of the Asiatic and American negro, also varies considerably from the European. On this subject some interesting information will be found in the Encyclopedia on the varieties of the human species, and there are likewise plates, illustrative of the subject. Suffice it here to remark, that some anatomists have attributed this variety in the crania of different nations to the management of the children when very young, supposing the head of the Turk to be rounded by an early use of the turban, while that of an Englishman is flattened by the chinstay; others are of opinion that the difference of the shape is not occasioned by any such accidental means, but by natural causes, with which we are as yet unacquainted. As this, however, is rather the province of the natural historian and physiologist, than of the anatomist, and as our limited space remind us that we must not degress, we must now contem-

plate the human cranium in its external aspect. Even in this view, the united bones we have described are divided into the cranium, or skull, and face. The adult cranium is, in general, spherical, but there is a great variety in skulls as well as in heads. The superior part of the skull is arched, and in some this arch is greater than in others; anteriorly, it is more or less flattened, posteriorly, more or less rounded, but always considerably more convex than on the interior part, and at the sides the cranium is flattened. There are a great number of processes and depressions on the outer surface, so as to render it very irregular in its appearance.

Upon viewing the external superior part of a skull, several zigzag lines are observable, called *sutures;* that which extends from one temple across over the head to the other temple is termed the *coronal suture*, (No. 2. fig. 1.) which unites the frontal to the parietal bones; another suture proceeds from one ear upwards across to the other, and is called the occipital, or lambdoidal suture; it unites the occipital bone to the two parietal, (No. 3. fig. 2.); and the suture which extends upon the crown of the head from the lambdoidal to the coronal, is called the sagittal. These are sometimes termed the *true sutures*, to distinguish them from two *spurious or squamous*, which are found on each side of the cranium, (No. 4. fig. 1.) extending from the temple backwards in the form of an arch, and uniting part of the temporal bone to the parietal. Besides these two sutures, two other portions are to be noticed, the one belonging to the lambdoidal and the other to the squamous suture, being in fact continuations of them, and are called *additamentums* to those sutures. The triangular shaped bones sometimes observed in the course of some of the sutures, are the Ossa Wormiana, or triquetra, or triangularia, already described.

The sutures are all more strongly marked on the external surface of the cranium, and their formation appears to be the effect of the particular manner in which the bones of the cranium ossify. Towards old age, bony matter is often deposited between the bones, so as to cause their disappearance, and sometimes, though seldom, at a very early peroid of life; and skulls have been met with in which the true sutures were obliterated at the age of twenty-eight, and likewise cases in which the sagittal and coronal sutures were likewise entirely obliterated in children of eight years old (Plate LII. Ency. figs. 1. 2. 3. for sutures).

The partitioning of the cranium into so many pieces, seems to be designed to facilitate the ossification after birth, and likewise to accelerate and render less difficult that event both to mother and child, as well as to prevent the spreading of fractures from one bone to another. There are, too, besides the sutures we have enumerated, several *prominences* upon the upper surface of the cranium, two on the frontal bone, one immediately over each eye, between it and the suture, one in the middle of each parietal bone, one in the middle of the occipital, pointing out the centre of ossification in these different bones.

The bones composing the upper part of the skull are composed of an external and internal table, which are of a compact structure, and of a spongy intervening substance, called the meditullium or diploe, already noticed when describing the structure of bones. The skull has been divided into the upper part now named, which is sometimes called the *calvaria*, and the basis. The calvaria comprehends all that portion situated anteriorly about an inch above the nose, laterally above the semicircular ridge of the parietal bones, and posteriorly about an inch above the occipital tubercle. It is this part (the calvaria) which is sawed off to examine the brain after death, and the operation of trepanning may be performed on any part of the calvaria, avoiding, if possible, those parts which lie over the sinuses of the dura mater. The calvaria is sometimes very thick, but it is not always clear whether this thickness be the effect of disease or not, but it has sometimes been, and perhaps justly considered, as one of the consequences of rheumatic inflammation. The calvaria is very subject to spongy venereal exostosis and caries, and one kind is peculiar to it, viz. the honeycomb caries, which consists in the total destruction here and there of one or both tables, so as to convey, though very imperfectly, the resemblance of the cells of a honeycomb. The compiler of this article, more than thirty years ago, when acting as assistant to the late Mr Taunton, surgeon to the City and Finsbury dispensaries, attended a patient of the former of these institutions, in which the greater part of the frontal bone was entirely destroyed by caries, from syphilis. The patient, a female, about twenty-eight years of age, recovered, and nature supplied new bony matter as a covering to the exposed brain.

*Diastasis*, or separation, and often the absorption of the bones of the calvaria, are frequently the consequences of an accumulation of water within the skull. Upon the internal surface of the upper part of the cranium there are a number of grooves in an arborescent form, made by the spinous artery of the dura mater, and the sutures are seen here in the form of a line not dove-tailed, and the whole surface appears more polished than the external. The *internal surface* of the basis of the cranium is divided naturally into eight considerable depressions, adapted to the lobes of the brain and cerebellum. Our limits forbid a particular notice of these cavities, with the different foramina and processes in the internal part of the skull, which, however, are all wonderfully contrived for the discharge of the respective offices they are destined to perform in the animal economy.

*The Fœtal Cranium.* From the facts already stated in our description of the separate bones, it will be found that the bones of the skull of a fœtus at birth, are far more numerous than those of an adult, for many of the processes of the latter are epiphesis in the former, a difference which has already been explained in a previous section of this article. Thus, for example, the occipital bone consists of four portions, and the sphenoid of three, and so of several other bones. There are no sutures in the cranium of the fœtus. The parietal and frontal bones do not coalesce until the third year, so that before that period there is an obvious interstice, commonly called *the mould*, or *open of the head*, technically the fontanel, or fons pulsatilis. There is also a lesser space occasionally between the occipital and parietal bones, termed the *posterior fontanel.* These spaces between the bones are filled up by the dura mater, and the external integuments, so that during birth the size of the head may be lessened, for at that time the bones of the head upon the superior part are not only pressed nearer to each other, but they

frequently lap over one another, to diminish the size, during the passage of the head through the pelvis.

The fibres of the bones of the fœtal cranium are seen diverging from a central point of ossification towards the circumference, and each bone appears to be composed of a single lamina, so that ossification is going on from a considerable number of points at the same time, and the bones consequently approach each other in the same proportion till they finally arrive at the state of perfect bone, of which a description has been already given.

Having now completed all we intended on the osteological description of the skull, or cranium, and face, we shall next consider, and that *very briefly*, the bones of the trunk, and then those of the extremities. The relative shapes, connections, and sizes of these bones are more distinctly seen in the anterior and posterior views of the skeleton than those of the head, which is the most important part in an osteological bust, in every other point of view, and therefore, a more full and extended demonstration of its structure than is given of any of the other divisions of the bony system was more especially called for.

Trunk. The bones of the trunk are composed of the *spine* or back bone, the *thorax* or *chest*, and the *pelvis* or *hips*. The spine, although spoken of as one bone, consists of not less than twenty-four bones, called vertebræ, which are arranged into three classes, the *cervical*, or those of the neck, (7) the *dorsal*, or those of the back, (12) and the *lumbar*, or those of the loins, (5.) As a short anatomical description of these different vertebræ, and of the intervening compressible and cork-like intervertebral substance will be found under *Vertebræ*, in the Encyclopedia, we refer to that article, and only notice, in this place, some of those circumstances which have either been omitted, or only very shortly noticed.

It will be seen by consulting the article referred to, that the spine is a bony column, the volume of the vertebræ being very considerable in the lumbar region, but decreasing in size as they ascend to the head, though with some irregularity, and forming a true natural pyramid, reposing its base on the sacrum, or large posterior bone of the pelvis, as a sort of pedestal, and having on its summit the head. Indeed, when taken altogether, it is an admirable structure, and it is no matter of surprise to us that almost every writer on natural theology should have selected this part of the human body as a specimen of the most exquisite mechanism.

The bodies of the vertebræ are, as already observed, connected by the intervertebral substance, and posteriorly by a yellow elastic ligament and by their oblique processes. The intervertebral substance, the peculiar nature of which has been hinted at in the fœtus, resembles more the structure of ligament, and in the adult it has a greater similitude to cartilage. Externally it is firm and hard, internally it becomes thinner and softer, and in the centre it is like mucus. A considerable change takes place in this substance in advanced life, when it becomes shrivelled, and loses in a great measure its elasticity, which occasions the decrease in stature, and the stooping forwards. Besides this change in old age, this substance also undergoes a temporary diminution after the full growth of the subject, from the weight of the body in an erect posture, so that people who have been long standing, or have carried a considerable weight, are found to be shorter, than when they have been long in bed; hence, we are taller in the morning than at night. By the aid of this intervertebral substance, and the processes and articular cavities of the bones of the spine, we have the finest specimens of motion by *ginglymus*, as shown in the connection of the atlas with the occipital bone of the *trochoides*, or that species of joint, or articulation, in which one bone moves round upon another, as in the connection of the first and second cervical vertebræ; and of syndesmosis, or that kind of movement so freely permitted by the union of bones by ligament, all which examples may be seen in the space of little more than one inch, in the connection of the head and spine, forming by far the most important articulation of the body. This, however, is not all; for the *trochoid joint* formed by the anterior arch of the atlas moving round the odontoid process of the dentatus, permits the head not only to rotate, as in moving from side to side, but as the head cannot move sufficiently round the dentatus without injuring the spinal marrow, all the cervical vertebræ likewise concur in the rotatory motion when in any considerable degree. Strong ligamentous fibres, too, pass from the sides of the odontoid process, over the atlas, to the os occipitis; which not only strengthen the articulation, but also limit its motions; and this odontoid or tooth-like process, is farther retained in its situation by the transverse ligament of the atlas.

To those facts we may add, that numerous muscles are attached to the back part of the spine, and several on the forepart.

This beautiful structure, the spinal column, is, however, like every other part of our frame, liable to accidents and disease; but we shall only notice those most common to the vertebræ. When an aneurism of the aorta is very large, the bodies of the vertebræ are occasionally absorbed, but the intervertebral substance remains entire. The writer of this article met with a case of aneurism in the aorta about twenty years ago, in a man of about forty-five years of age, in which a post mortem examination was permitted, and four of the ribs were found to be partially absorbed, and part of the bodies of two of the dorsal vertebræ. The attentive reader will not fail to notice the extraordinary fact, that bone should be sooner absorbed than cartilage, a much softer and yielding substance; but the same phenomenon takes place in caries from other causes, and the spinal marrow is always defended in these cases by a deposit of coagulable lymph. Caries, distortion, and hydrorachitis, or spina bifida, are also not unfrequent affections of the spine. This latter disease, viz. *spina bifida*, consists of a tumour filled with water, which makes its way between the processes of a vertebra, and divides it in two.

In conclusion, much of the animal mechanism of the spine may be learned from examining the spine of some of the lower animals; and it may not be altogether useless to learn how to know any separate vertebra of the spine that may be found, and the class to which it belongs, which may be easily done by recollecting, if our descriptions are borne in mind, that the peculiar characteristic of a cervical vertebra is the perforations in the transverse processes. The dorsal vertebræ are distinguished by having articular surfaces, for the heads of the ribs, and the lumbar by their size and the length of their transverse processes.

The *Thorax* or *Chest*, is formed by the *Costæ* or

*Ribs*, twenty-four in number; the true ribs (No. 16. fig. 1.; the false, 17. fig. 1.) those well known semilunar bones are situated at each side of the chest, or thorax. They are connected with the vertebræ of the back, and, in connection with those vertebræ, form the posterior and lateral part of the chest. As we wish to include in this section the osteology or bony boundaries of that part of the trunk called the chest, or thorax, we remark, in general, that the chest resembles an arched bony cavity, narrow above, broad below, flat anteriorly, or in the front, hollow posteriorly, and convex laterally, and is composed of the twelve dorsal vertebræ already described, the sternum or breast bone, and the twenty-four ribs just noticed.

The *Sternum*, or *Os pectoris*, or breast bone, and its situation, are well known; it is an oblong flat bone, somewhat of the shape of a dagger, of a very spongy texture, and mostly consists of two, and sometimes of three, portions. A sharply pointed cartilage, situated at the pit of the stomach, is attached to the inferior extremity of the breast bone, and, from its supposed resemblance to a sword, called the *zyphoid*, or sword-like cartilage, and sometimes the ensiform cartilage. The bones then, above named, viz. the dorsal vertebræ, the twenty-four ribs, and the breast bone, constitute the *thorax*, and the obvious uses of this bony casement, are to defend those important organs, the heart and lungs, and their more immediate appendages, the blood-vessels and air-vessels; and to give adhesion to the mediastinum, that membranous partition which divides the chest into two cavities, and also attachment to the other muscles, especially those concerned in respiration.

In addition to what is stated above, respecting the situation, number and designation of the ribs, &c. we may here observe, that they extend obliquely, from the dorsal vertebræ round towards the sternum, to which they are connected by strong cartilages. The seven ribs on each side, whose cartilaginous extremities are affixed to the breast bone, are those called the *true ribs;* and the five on each side whose extremities do not reach the breast bone, are the *spurious*, *false* or *floating* ribs.

The first rib is very short and much curved, broader than the other ribs, and its external extremity is united to the breast bone by a short portion of cartilage at a right angle. The second is longer than the first but shorter than the rest. The other ten differ chiefly in their length, which gradually increases from the first or uppermost to the seventh, or last true rib, from which they gradually diminish to the twelfth. Their obliquity, in respect to the spine, increases as they descend, as does the distance between the head and angle of each rib from the first to the ninth. The two lowest ribs differ from all the rest, having no tubercle for the articulation or union with the transverse processes, and are much shorter. Although the views of the skeleton in the plate give a pretty plain representation of the relative situations and articulations, it may be more clearly understood by stating that while the true ribs articulate with the breast bone, the eighth rib, or the first of the false ribs, is attached by its cartilage to the lower edge of the cartilage of the seventh, or last of the true ribs, the ninth in the same manner to the eighth, and the tenth to the ninth, the cartilage of each rib being shorter than that of the rib above it, and the two last, as may be seen in the plate, are not fixed at their anterior extremities, but hang loosely, being supported by ligamentous fibres.

The only other circumstances of particular interest are, the longitudinal groove on the inferior and interior surface of each rib, for the passage of the intercostal artery, vein, and nerve, and the kind of connection formed between the spine ribs and sternum. The joints formed by the connection of the ribs with the vertebræ and sternum are of the ginglymus kind, allowing the alternate motion of the ribs rising and falling, as we draw in and let out our breath, while the great head of each rib is hinged in the invertebral substance, touching two vertebræ, and surrounded by a capsular ligament; and the cartilages of the ribs which join the sternum are similarly connected by the same kind of ligaments and ligamentous fibres which expand over the breast bone.

The ribs, at birth, differ very little in substance and form from those of adults, and it need scarcely be observed that they unite with the other parts of the thorax, for the same purposes of giving form to the chest, to act in respiration, to defend the vital viscera, and give attachment to muscles.

The bones of the thorax, like the others, are subject to accident and disease, great portions of the ribs being absorbed by the pressure of aneurisms, as stated in our paragraph on the vertebræ, while caries sometimes attacks the sternum, and the bone crumbles away insensibly. The sternum is likewise liable to be operated upon by the trephine, to afford exit to the matter of an abscess in the anterior space of the mediastinum. The xyphoid cartilage attached to the inferior part of the sternum occasionally takes on a disposition to curl outwards, and produces considerable pain and uneasiness.

We next descend to the *loins*, which have been already described, in the article *Vertebræ*, in the Encyclopedia. The *Pelvic Region* forms, as it were, the basis of the trunk of the skeleton, and has received its name from its resemblance to a bason formerly used by barbers. The fore part and sides of the pelvis, or bason, and lower part of the sides of the abdomen, are constituted by the two large, broad and irregularly shaped bones, called *ossa innominata*, or hip bones, and the upper edge is frequently called the hip. Each of these bones is usually described as three bones, from its having been composed of three distinct portions or pieces, in the first period of life, and these portions yet retain the same name, though yet united into one solid broad bone, and are referred to by figures in the plate. They are the ilium, (No. 23. fig. 1.) the ischium, (25. fig. 1.) and the os pubis, (26. fig. 1.) There is likewise an eminence called the cresta, or spine of the ilium, (24. fig. 1.) and other eminences, spines, and tuberosities on these bones. There is one cavity, however, in each of the hip bones which deserves particular notice, viz. the *acetabulum*, which receives the head of the os femoris, or thigh bone. The *os sacrum*, (10. fig. 2.) forms the back part of the pelvis, and is situated at the bottom of the spine, and of course a posterior part of the pelvic region. It derives its name either from its being offered in sacrifice by the ancients, or from its supporting the organs of generation, which they considered as sacred. It is of a triangular shape, bent forwards, and by many anatomists considered as a bone of the spine, and from its irregularities, processes, and foramina, it seems to have some claims to be considered as such. The only other bone of the pelvis is the os coccygis, (11. fig. 2.)

and consists very frequently of two, three, or four portions, although in advanced age it is one solid bone; it is triangular, or irregularly shaped, and is placed at the extremity of the sacrum. It is supposed to have some resemblance to a cuckoo's bill, and hence its name. It sustains the rectum, or lower portion of the bowels, and prevents the rupture of the perineum in child labour, one of the most distressing accidents that can befal a woman, and it sometimes happens that in labour it is separated from the sacrum.

The pelvis, or bones which constitute that part of the skeleton, are connected superiorly with the last lumbar vertebra, which is united to the os sacrum, and the sacrum laterally with the ossa innominata, while each of the innominata, or hip bones, is connected with its fellow by symphisis at the os pubis, or pubic portion already alluded to, and with the saerum posteriorly, and to the head of the thigh bone, which, as already stated, is lodged in the acetabulum. These united bones form the pelvis, on which the spine rests, and which retains the gravid uterus in its situation, constitutes the acetabulum for the thighs, and gives attachment to numerous powerful muscles and ligaments, also affording lodgment for the internal organs of generation, the urinary bladder, the rectum, and occasionally part of the small intestines. In consequence of its subserviency to all these important offices, it is necessary that it should be permanently fixed and immovable, but more especially on account of the great force applied to its parietes by the natural mechanism of parturition, or child labour. The obstetric properties of the pelvis can only be learned from that of a well-formed adult woman, that is, one eighteen or twenty years of age, which is the period of life, in temperate climates, at which she is capable of becoming a mother, with perfect safety to herself, and to her infant. At an earlier age, the pelvis is not sufficiently strong, or developed, to bear the burden of pregnancy, or force of parturition, and at a later age the bones which form the osseous canal of this part are too firmly articulated, and their ligaments too rigid and strong to allow the commodious and easy passage of the infant. At both ages, women purchase the pleasures of maternity at a very dear rate, generally at the risk of their own, and that of their infant's, although there are some exceptions, for we have seen a first and easy natural labour in a girl of fifteen, and another in a woman who had arrived at forty-eight before she became a mother. It may not, however, be out of place shortly to notice the peculiarities of the male and female pelvis. In the *male*, the pelvis preserves its infantile properties, it is deeper than in woman, its short or sacro-pubic diameter is not more than three inches, and the transverse measures four and a half, and bis-ischiatic three and a half. The arch of the pubis is short and triangular, not expanded as in the female. The sacrum is less hollow, and the bones are thicker and stronger in general, and more solid, so as to render it physically impossible for an infant of full growth to pass through the male pelvis, and hence the absurdity of the old fictions, that hermaphrodites were fathers and mothers on different occasions; but indeed there has never been known yet to exist such a being as a perfect human hermaphrodite.

The pelvis in the female is broader at the hips, as well as in every other part; and here nature seems to have sacrificed the facilities of motion, as may be seen when a female attempts to run, to the advantages of pregnancy and parturition. There is another most striking peculiarity: the articulations of the female pelvis are not anchylosed, while they are firmly ossified in the male. Observation, however, abundantly proves that with many women the pelvis retains the form which characterised it during infancy and puberty, and which nearly approaches to that of the male, but such a pelvis is considered deformed, and is sometimes called a false pelvis.

The pelvis may be deformed in its rim, cavity and outlet, and offer serious impediments to the passage of the infant, or render delivery dangerous, difficult, or impossible. On the contrary, it may be too capacious, or possess excess of amplitude, thereby affording too ready a passage to the fœtus. In the latter case, delivery will suddenly take place, often unexpectedly, and in extraordinary situations, as on the high-way, in a stage-coach, or in the sitting room, before the woman can retire to her apartment. Ample evidence is afforded of this fact, not only in works on obstetricity or midwifery, but even occasionally in the public newspapers; and by the way, this is one reason, among many others, why every man liable to be called upon to act as a jurist, should be acquainted with at least the general facts of anatomical science, as women have not unfrequently been tried for child-murder, when it has often appeared in evidence that they had been delivered, or that the child was born in circumstances they could neither foresee nor prevent, and had been killed by the fall, or suffocated, or drowned in some substance among which it might drop. In fine, the obstetrician must study this part distinct from the rest of the body, as one intimately connected with his art, as the book of nature, which must be always consulted, and which affords the best precepts for practice. A knowledge of its peculiarities, its regions, dimensions, directions, planes, axis, structure, connections, and varieties, are all indispensably necessary to those who wish to practise with dexterity the obstetric art, as by ignorance of these many mothers and children have been sacrificed.

The *Upper Extremities.*

The upper extremity, (for we shall notice them in the singular, seeing that the description of the one is almost entirely the same as that of the other,) consists of the collar bone, or claviele, (No. 18. fig. 1.) the shoulder blade, or scapula, (13. fig. 2.) the bone of the arm, called the os brachii, or os humeri, (20. fig. 1.) the foramen, composed of the ulna and radius, the former, (21. fig. 1.) and the latter, (22. fig. 1.) and the hand, consisting of the carpus, or wrist, (19. fig. 2.) the metacarpus, (20. fig. 2.) and the fingers, or digiti manus, (21. fig. 2.)

The *shoulders* consist of two bones, the clavicle and scapula, which are united together at the acromion process, (15. fig. 2.) immediately over the top of the os brachii, or bone of the arm, and form what is properly termed the shoulder.

The *clavicle*, or *collar bone*, so termed from its resemblance to an ancient key, is a long, roundish bone, shaped like the letter *s*, and its situation is very distinctly seen in the plate, (18. fig. 1. or 12. fig. 2.) This small bone performs some very important offices, connecting the shoulder blade and bone of the arm, to the thorax defending the subclavian vessels, regulating the motions of the scapular, and is in fact the axis on which the whole upper extremity rolls, the scapular serving rather

as a socket for the os brachii, and hence such animals as make much use of their fore legs, are furnished with clavicles, as the ape, bear, bat, mouse, badger, mole, &c. and an example may be seen in plate LII. article *Mammalia*, in the Encyclopedia, (fig. 13.) and the same plate, if carefully examined in connection with the article which it illustrates, will shed considerable light, not only on human, but comparative osteology. The *scapula* is very distinctly seen in the back view of 13. fig. 2.; 14. marking its spine, which is in the middle of its external surface, arising small from the posterior edge of the scapula, becoming gradually higher and broader as it reaches the anterior part of the scapula, where it terminates in a broad, flat process, called *acromion*, the anterior edge of which forms an articulation for the clavicle; the situation of this is marked 15. fig. II. The shoulder blade is of a triangular figure, situated on the back and upper part of the ribs, forming the posterior part of the shoulder, and so very thin as to be transparent in its greatest extent. It is retained in its situation merely by muscles, that unite it to the head of the os hyoides, the ribs, the vertebræ, and the upper arm bone; and by means of these muscles, it consequently has the power of moving upwards, downwards, backwards; it will therefore be obvious, how very necessary that its motions should be regulated by its connection with the clavicle. None need be told that the *shoulder joint* is one of considerable importance, and that its motions are loose, movable, and very free, and that it is even more liable to be luxated, or displaced than any other joint in the human body. It is formed by the large round head of the arm bone, and shallow, articular cavity of the scapula, the sides of which are elevated with cartilage, and a capsular ligament, large, wide, and loose, is fixed to the neck of the scapula and os brachii, and surrounds the joint. Its almost constant movement renders it requisite that it should be abundantly supplied with synovia or joint oil, and for that purpose, there are several bursæ mucosæ, opening into it, independent of the natural secretion of the capsular ligament. The motion of the joint is indeed partially restrained, and rendered more secure by the acromion process, which projects over it, and by another process, called the coracoid process; below a strong ligament likewise extends from one of these processes to the other, and another ligament extends from the acromion, to the capsule of the joint, and farther security is derived from four muscles, which are likewise inserted into the capsular ligament.

The *Arm* consists of one long bone, os brachii, or os humeri, and occupies the space between the junction of the clavicle and scapula with the fore arm. It is a long cylindrical bone, having a rounded head on its superior part, and on the inferior extremity are three processes, namely, an external and internal condyle, and the trochlea of the bone, on which the ulna moves.

It is connected, as already stated, with the bones of the shoulder, or, more correctly, its hemispherical head is received into the glenoid cavity of the scapula, constituting a ball and socket joint. It has several furrows, or cavities, which serve for the attachment of muscles, not less than twenty-four being attached to this bone; it is united to the two bones of the forearm by means of a ginglymus joint.

*Fore Arm.* The *ulna*, (17. fig. 2.) forms the internal and posterior part of the fore-arm, and the *radius*, (18. fig. 2.) the external and anterior. The *ulna*, or larger bone, has a large upper extremity, scooped out in front, forming what is called the greater segmoid cavity, with which it articulates with the base of the os brachii. Below this apparent excavation by the coronoid process, and above by the olecranon, or elbow, upon which we lean. The ulna is a long bone, and thicker above than below, and there is likewise a lesser sigmoid cavity at the side of the coronoid process, in which the rounded sides of the head of the radius play. The lower end has a rounded articular surface for the radius, and beneath a shallow cavity for an inter articular cartilage, the medium of connection with the wrist, and its extreme point forms what is called the styloid process.

The *radius*, or lesser bone, is named from its imaginary resemblance to the spoke of a wheel, or to a measure used by the ancients. It is situated on the outside of the forearm; the body of the bone inclines to a triangular form, the upper extremity, or head, presenting a circular cavity, articulating, as already stated, with the smaller condyle of the os brachii. Its circumference joins with, and turns in the smaller sigmoid cavity of the ulna; below this circular cavity the bone is contracted, forming a neck, which terminates in the bicipital tubercle, to which is fixed the biceps muscle. The lower end of the radius has a superficial cavity, articulating with the scaphoid and semilunar bones of the wrist. On the inner side there is a narrow concavity, in which the lower extremity of the ulna rotates, and the extreme point of the bone, like that of its fellow, is called the styloid process.

The first of these bones, the ulna, is, as has been already stated, connected superiorly with the trochlea of the brachii by *arthrodia*, inferior with the carpus by *arthrodia*, and with the radius by the trochoides, as in pronation, and supination. The radius is connected with the brachia by ginglymus, to the ulna by an inter osseous ligament and trochoides, and to the carpus by arthrodia. Did our limits permit, we might advert at considerable length to the mechanism of the bones and joints of the lower arm, to which two bones are attached not fewer than twenty muscles; but we must content ourselves with referring to Dr Paley, and his noble, and learned, and ingenious commentators, Lord Brougham, Sir C. Bell, T. Dick, LL. D., Dr Roget, and Mr Paxton, to all of whom the public at large, but especially juvenile inquirers, are under the deepest obligation for the pains they have taken to render anatomical and scientific details pleasing and instructive to every class of readers.

The Carpus, or Wrist, is situated between the forearm, and the metacarpus, and is composed of eight bones, which lie close to one another in a double row, one of which is superior and the other inferior; and all these bones bear some resemblance to the names given, or the things from which those names are derived. In the superior row from the thumb, to the little finger, are the os scaphoides, or naviculare, lunare, cuneiform, and orbicular, and in the lower row are the os trapezium, trapezoides, magnum and unciforme. The nature of their union with the fore-arm has been already stated, and they are connected with the metacarpus by arthrodia. A capsular ligament surrounds them, and the joint is strengthened by several

others, which proceed in all directions. The bones of the wrist assist in forming the hand, and are, by most anatomists, included under the same division. These eight bones have a gentle motion on each other, and on the fingers, and also admit of a very limited motion in every direction with the bones of the arm, and give attachment to ten muscles.

The *Metacarpus*, or bones of the palm of the hand, are placed between the carpus and fingers, and are four long rounded bones; although some anatomists, including the first bone of the thumb, reckon five metacarpal bones. The upper ends of all these bones have plane surfaces to unite with the wrist, and where they are contiguous to each other, they have also flat articular surfaces, and their lower ends articulate with the fingers by convex heads to allow of a free motion, in every direction having a lateral motion, as well as that of flexion and extension. They form the middle part of the hand, and have not fewer than eleven muscles attached to them.

The *Digiti Manus*, or fingers, the situation and number of which, it is unnecessary to state, consist of twelve bones, arranged in three rows, termed Phalanges digitorum; they are round on the back, but flat, and somewhat concave in front; and there are eighteen muscles attached to the finger bones. The bones of the *thumb* are three, and very much resemble the bones of the fingers, but as the thumb is the antagonist of the fingers, it is much thicker and stronger, and the first bone is connected by a double articular surface to the trapezium, and there are three muscles attached to the thumb. Those who wish to study the wonderful mechanism of the hand and wrist, will derive much pleasure, and a vast portion of interesting information, by consulting Sir C. Bell's *Bridgewater Treatise*. We cannot, however, resist observing, that although it would seem superfluous to enumerate the uses of the hand and fingers, as the instrument of defence, labour, &c. yet that as one part has a very obscure motion, and serves as the base for the other, which performs the chief of the motions, a few remarks appear to be called for. We find, in the first place, that the carpus, or wrist, being composed of many small bones, yields a little to our force and accommodates itself to the different motions of the hand, while the metacarpus, by being composed of several bones, enables us to form a hollow on the palm of the hand, while the space between them serves for the lodgement of the muscles. Each finger, too, being composed of three bones, enables us to grasp and perform several motions, which could not be effected were it in one bone. Finally, the general convexity of the bones of the hand strengthens the whole considerably, while the hollow on the inside affords a passage to vessels and nerves, and contributes to other conveniences which we dare not now attempt to enumerate.

Vascular System. This system, a description of which is sometimes called Angiology, or doctrine of the vessels, consists of long membranous canals, or vessels, and ducts, which convey blood, lymph, chyle, or a secreted fluid through every part of the body, and indeed, except the epidermis or scarf skin, the membrana arachnoidea, (or net-like membrane, which is situated between the dura and pia mater, and which surrounds the cerebrum, cerebellum, medulla oblongata, and the spinal cord) and nails, every part of the body has vessels which injections demonstrate, and these vessels are divided into arteries, veins, absorbents, and excretory ducts. For a more particular account of the arterial and venous systems, see *Heart* and *Blood-vessels* in Encyclopedia; and for *Absorbents*, see *Lymphatics*, in Supplement.

The Nervous System. In a short anatomical sketch like this, it is impossible to do any thing like justice to the nervous system, which certainly, as Sir C. Bell terms it, is "the highest department of anatomical and physiological study." It is now, too, one branch of those sciences which has,—by the industry, zeal, and talent, of our distinguished countryman just quoted, and another countryman and relation of Sir Charles', Mr Shaw, with Messrs. Mayo, and Newport, and Dr Hall, of London, M. Magendie, of Paris, Dr Graves, of Dublin, and others,—experienced a complete revolution in the course of only a few years, so as to render any attempt at even a bird's eye view of the truly interesting discoveries made chiefly by Sir C. Bell, altogether impossible in the limits this article is permitted to occupy. Much, however, that is important, will be found in the articles *Nerves*, *Brain*, &c. in the Encyclopedia, and *Nervous System* in the Supplement

The Mucous, Serous, and Glandular Systems. As it would be foreign to the nature of this article, to enter into any thing like an anatomical description of the extensive mucous tissues which line the different cavities of the body, or the almost equally extensive *serous tissues*, these tissues, as also the glandular system, will be found described under their respective designations, in the *Supplement*.

Adipose and Cellular Systems. We have classed these together, as they have by some, although without a shadow of truth, been considered as one; still, however, they are very intimately connected. The *cellular substance*, or texture, is the most extensive in its distribution of any in the machine, as it is found in almost every organ of the body, and forms a part of almost every organ. It is composed of laminæ, and fibrous texture, so as to form cells, and a web-like structure, and from its very extensive distribution and the free communication of its cells, when it is distended, air, or thin fluids, may be made to pass through it, from one region of the body almost to any other, and this is exemplified even in the living body, in the diseases called emphysema, or windy dropsy, and anasarca, or general watery dropsy, and is also well shown in dead animals, by butchers blowing up their veal and mutton, and distending the cells with air.

Before proceeding to a consideration of the last division of our subject, or placing over the machine a dermoid covering, we shall simply enumerate the internal viscera or contents of the four great cavities of the head, chest, abdomen, or belly, and the pelvis; referring, for the anatomical descriptions, to the English names of the several viscera in the alphabetical arrangement in the Encyclopedia and this Supplement. We may at the same time observe, that some interesting information respecting the stomach, liver, &c. and the other chylopoetic viscera, as they are sometimes called, will be found in the articles *Digestion*, *Dyspepsia*, and other documents referred to in those articles.

The head and face, or in other words, all those internal cavities, osseous and fleshy, or hard and soft, which rest upon the atlas, or first vertebra of the neck, contain the brain, with its nerves, blood vessels, absorbents, glands, and coverings;

the organs of sight, hearing, smell, and taste; and a portion of those organs connected with *respiration, deglutition, speech, sound,* &c., and that portion of medulla oblongata which lies upon the cuneiform process of the occipital bone, the descending portion being, till it terminates in the medulla spinalis, covered by the cervical vertebra. The upper part, or commencement of the larynx, or opening which terminates in the trachea, or wind pipe, and of the pharynx, which terminates in the œsophagus, or gullet, are all contained in, or connected with, the same cavities.

The *Chest or Thorax*, is divided internally into five cavities, which contain the following viscera, viz. the pleura, the lungs, the thymus gland, the œsophagus, thoracic duct, arch of the aorta branches of the vena cava, the vena azygos, par vagum and great intercostal nerves, and the cavity containing these is separated from the abdomen or belly by a large and powerful muscle, called the diaphragm, or midriff. The *Abdomen*, or belly, is divided into several regions, as will be seen from the plate, and its internal parts and viscera are the omentum, stomach, small and large intestines, liver, gall-bladder, mesentery, lacteal vessels, spleen, pancreas, kidneys, suprarenal glands, part of the aorta descendens, and vena cava ascendens. The pelvis contains the urinary bladder and the internal parts of generation.

The Dermoid System consists of the *skin*, the external envelope of the body, which varies in its thickness from about a fifth to a twentieth of an inch. It is exceedingly tough, and is by far the most elastic of all the softer textures. The skin consists of two parts, placed one above the other. The inner lamina is called the *true skin*, and the outer *cuticle, epidermis*, or *scarf skin*.

Although we are reminded that space forbids us pursuing the interesting facts connected with the structure and functions of the skin, our sketch would be very defective did we omit to notice another use of the tegumentary covering of the human body, as without this our hints on the *Mucous System* would be almost unintelligible. The skin then is prolonged into various passages of the body, the eyes, nose, ears, mouth, lungs, œsophagus, stomach, intestines, urethra, bladder, ureters, kidneys, vasa deferentia, and tubular structure in the testes of males. In females, it lines the vagina, uterus, uterine, or Fallopian tubes, and lactiferous tubes in the mammæ or breasts. The skin then, taking an internal course, changes its name, and assumes that of *Mucous Membrane*, and this membrane is attached to subjacent organs by cellular tissue. That portion of it which lines the digestive and respiratory organs was termed gastro-pulmonary, by Bichat, and that which lines the genital and urinary organs, mucous membrane. The tegumentary and lining membrane of all the passages of the body are continuous, and therefore the diseases of the one will affect the other.

The appendages of the skin are the nails and hair. The hairs are horny filaments, which appear on the human body, except on the palm of the hand, but very much on the scalp of the head, the eye-lids, eye-lashes, face, nose, ears, axillæ, pubes, &c. See *Hair* in Encyclopedia.

The nails are well-known, horny productions, composed of lamellæ or scales, and the root of each nail is received into a sulcus or groove in the skin.

We have now completed the short sketch or history of the structure of the human body, and seen that body covered with its universal envelope, the skin; let us now then attentively survey the wonderful machine, as it appears denuded of artificial covering, so as to render our short, imperfect, but, we flatter ourselves, comprehensive anatomical details, somewhat more complete.

A formal description of the external appearance of the human body, in its full grown state, is altogether unnecessary, as it may be presumed to be familiar to every one. For the sake of greater clearness, however, in describing the situation of the internal parts, we have, with the aid of figures, endeavoured to fix the limits of the external regions of the body, adopting the popular and well marked divisions of the *head, trunk*, and *extremities*.

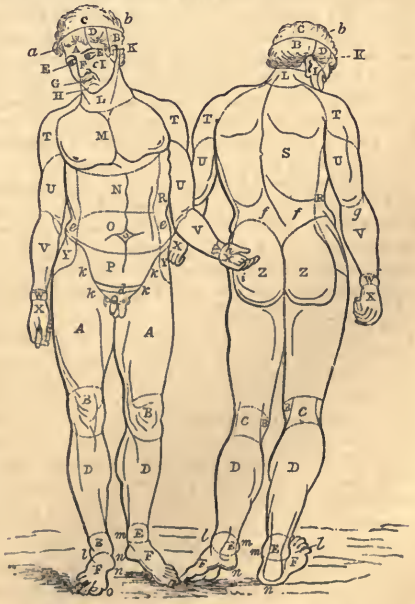
### *Regions of the Head.*

A The Brow or Forehead; the space *a*, towards the middle and lower part of it, being called Glabella.
B The Occiput or Hindhead; its most prominent point backwards being denominated the Occipital Protuberance.
C The Crown of the Head; the most prominent point *b*. on each side of it, being called the Parietal Protuberance.
D The Temple on each side of the head.
E The Region of the Eye on each side of the head.
F The Region of the Nose.
G The Region of the Mouth.
H The Chin.
I The Cheek on each side of the head; *c*, its most prominent point above and laterally being called the Malar Protuberance.
K The External Ear on each side of the head.

The term *Face* is applied to all that part of the head which includes the Regions of the Brow, Eyes, Cheeks, Nose, Mouth, and Chin.

### *Regions of the Trunk.*

L The Region of the Neck, bounded on each side, below and before, by the ridge called the collar.
M The Breast.
N The Epigastrium or Epigastric Region, at the upper and middle part of which there is a slight depression called the Pit of the Stomach or Præcordia.
O The Umbilical Region
P The Hypogastrium or Hypogastric Region.
Q The Pudendal Region, of which the upper part *d*, is called



the Pubes, and which comprehends below the Penis and Scrotum, the Perineum and Anus, in the Male, and the Vulva, Perineum, and Anus in the Female.

R The Side, right and left, of which the lower part *e*, is called the Flank.

S The Back, the space *f*, on each side of it below, being called the Loin or Lumbar Region.

*Regions of the Extremities—Of the Upper Extremities.*

T The Shoulder.

U The Arm.

V The Fore arm, in its most prominent point *g*, above and below, being the Elbow.

W The Wrist.

X The Hand, on which the prominence *h*, in the palm, is called the Ball of the Thumb, and *i* the Ball of the little Finger.

*Regions of the Lower Extremities.*

Y The Haunch.

Z The Hip or Buttock.

*A* The Thigh, which is separated from the Hypogastrium and Pubes by the hollow *kk*, called the Groin.

*B* The Knee.

*C* The Ham.

*D* The Leg

*E* The Ankle, in which the prominence *l* is the External and *m* the Internal Malleolus.

*F* The Foot, in which the prominence *n* in the Sole is called the Ball of the Heel, and *o* the Ball of the Great Toe.

By the aid of these views of the external regions of the human body, any intelligent patient or his friends will have no difficulty in describing to a physician or surgeon at a distance the seat of pain or disease. This we consider to be a matter of the first importance, and we have therefore endeavoured to render the subject still more clear by the preceding figures.

Let one example suffice: say that a patient laboured under some harassing pain in a given part of the head, chest, or abdomen, and was not able to explain or exhibit the locality; suppose it was in the region of the head, let him inform the physician whether it lay in the divisions A, B, or C, or any other division, and then the medical adviser would have little or no difficulty in ascertaining the seat of the pain or disease.

The general reader who wishes to prosecute this interesting science, will find much useful information in the short anatomical systems of Paxton, Quain, Cloquet, and Craigie; the latter is a truly valuable, yet cheap publication, forming a neat quarto volume, with exquisite engravings. Those who wish to dip deeper into the subject, will consult the works of the Bells and Bransby Cooper, with Todd's truly excellent Cyclopedia of Anatomy and Physiology, &c.

The Bridgewater Treatises, by Sir Charles Bell and Dr Roget, &c. with Lord Brougham's and Sir Charles Bell's edition of Paley's Natural Theology, will likewise amply repay an attentive perusal, and induce the student to exclaim, in the language of an inspired poet and king, "Verily I am fearfully and wonderfully made."

ANEURISM (*a*,) has been defined a preternatural tumour, formed by the dilatation of an artery, of which there are three species, viz. the *true* aneurism, of which there are two species; second, the *false* or *spurious* aneurism; and third, the *varicose* aneurism. True aneurism is a circular or uniform dilatation of the three coats of an artery, and is commonly met with in the aorta, accompanied with thickening of the serous muscular coats, and depositions of calcareous matter on the exterior surface of the serous.

The *symptoms* of circumscribed true aneurism generally occur as follows: an extraordinary throbbing in some particular situations is felt by the patient, and, on examination, he discovers there is a pulsating tumour, which entirely disappears when compressed, but returns again as soon as the pressure is removed. It is commonly unattended with pain or change in the colour of the skin. When once the tumour has originated, it continually grows larger, and at length attains a very considerable size. The danger of an aneurism arrives when it is on the point of bursting, by which occurrence the patient usually bleeds to death, and in some cases, in the course of less than one minute. The fatal result may generally be forcseen, as the part about to give way becomes particularly tense, elevated, thin, soft, and of a dark purple colour.

The *false* or *spurious* aneurism, is always owing to an aperture in the artery, from which the blood gushes into the cellular substance. This is particularly apt to occur at the bend of the arm, where the artery is exposed to be injured in attempting to bleed. When the artery has been wounded by an ignorant and careless operator in blood-letting, it is immediately known, as soon as the lancet has punctured the artery, by the blood spouting with an unusual force, with occasional interruptions, and of a bright scarlet colour, not so dark as the blood from the vein. The blood, however, flows out in an even and less rapid stream when pressure is applied higher up than the wound. These are, then, the most characteristic marks of the artery being punctured, for blood will often be found to flow from a vein with great rapidity, and that too in a broken current, when the vein is very turgid, and situated immediately over the artery, which, by its pulsating, imparts its motion to it. The operator in endeavouring precipitately to stop the bleeding by pressure, often occasions a diffused false aneurism. The shutting up the external wound by a bandage, and keeping it together till it unites, prevents the blood from escaping externally; but as the wound in the artery is not healed, the blood escapes, and insinuates itself into the celluiar substance; or, as they would say in some parts of Scotland and Ireland, between the *fell and the flesh*. This produces an uneven and often knotty swelling, which extends upwards and downwards along the course of the artery. The skin soon assumes a purple colour, and the swelling increases as long as the internal bleeding continues; and if this discharge of blood is not soon stopped, mortification of the arm ensues, and sometimes death closes the scene.

The *varicose* aneurism was first discovered or described by our learned countryman, Dr William Hunter, who bequeathed his beautiful *anatomical museum*, &c. to Glasgow university. It is occasioned by puncturing an artery which lies below a vein in the operation of blood-letting, and most frequently happens in the brachial artery, or artery of the arm. The arterial blood, in this case, runs into the opening made in the vein, and produces a varicose aneurism; or, in other words, the vein becomes varicose, or enlarges, becomes a serpentine tumour, and often forms a plexus of knots. The vein, in this case, now pulsates like an artery, and communicates a tremulous motion to the touch, and rustling noise to the ear, somewhat resembling the hissing noise of air ejected from a syringe, and occasionally so loud during the night as to prevent the patient sleeping. The pulsation is only, however, distinct in the centre of the tumour, and the contiguous veins are more or less varicose, or, in other words, irregularly enlarged. Aneurisms may

occur in any part of the body except the last species, viz. the varicose aneurism, which can only take place where a vein runs over an artery.

"Aneurisms," says professor Lizars, "occur more frequently in men than in women, the former sex being more subject to those occurring in the extremities, the latter to those in the trunk, and in many individuals it is a constitutional disease. Aneurism occurs most commonly between thirty and forty years of age, and is said to attack the irritable, the passionate, the glutton, the drunkard, the debauched, the syphilitic, the mercurial, and the rheumatic. Coachmen, post-boys, postilions, soldiers, particularly dragoons, sailors, porters, labourers, and miners, are said to be most subject to it." We have not, however, sufficient data to fix so very particularly on any class, as the statistics of disease are yet miserably deficient in practical details. These classes of individuals, indeed, by indulgence in vice, appear to dispose their arteries either to calcareous depositions, or to a brittle condition, so that in the violent exertions which occur in their labours, these vessels rupture and form aneurism, in consequence of the circulation being propelled at such periods with greater force than the artery has power of resisting; but even in the ordinary circulation of such constitutions, if an artery be weakened, it is unable to resist the momentum of the blood, and therefore gradually yields and dilates; and our own experience, which on this subject has been considerable, bears us out in these observations. Violent shocks or contusions, forcible pressure on arteries, the reiterated bursting of parts, the force employed in reducing luxated joints, the violence of falls, fractures, and wounds, are also causes of aneurism. The largest artery, the aorta, is, as we have already observed, most subject to this disease; the next in frequency, is the femoral, or artery of the thigh, and its continuation, the popliteal; the third is the inguinal; the fourth, subclavian, and axillary; and the fifth, the carotoid. The smaller series of arteries, the radial, ulnar and tibial, are seldom attacked, with the exception of the temporal, which, from being selected for arteriotomy, or bleeding from the arteries, is exceedingly subject to aneurism. The reasons for this order are very obvious, being chiefly consequent on the impetus of blood, and the deficiency or delicacy of the adventitious tunics or coats, together with the deficiency of support by the contiguous structure. To render the meaning of the two preceding sentences more clear to the general reader, aneurism is most common in the larger vessels that are most subjected to the impetus of blood, especially such as have less bony or muscular support.

With respect to the *cure* of aneurism, medicine can indeed effect little good; and the instant an individual finds aneurism existing even in a small artery, he should lose no time in reporting his case to a skilful practitioner.

The usual *treatment* consists in general and local remedies, the former being chiefly applicable to internal aneurisms, or those situated within the cavities; the latter to the external aneurisms, or those of the extremities, neck, and external parts of the head. The general remedies are abstracting blood in small quantities, confining the patient to bed, and low diet; the application of a firm compress to the tumour, with a bandage rolled from the toes upwards to the groin, for those of the lower extremities. This is also named the palliative treatment, being that of Valsalva, who was the inventor, and in whose hands, as well as others, it has succeeded. Cold astringent applications, especially tar, have been also recommended. "But in the aneurism of the extremities, there are," says professor Lizars, "many cogent objections to this. In the first place, the patient may be so reduced by the confinement, as to be unable to withstand the subsequent confinement after the operation, since in many cases it is necessary to remain quiescent in bed for three or four months, for fear of secondary hæmorrhage. In the next place, if much blood be effused, the absorbents are incapable of removing it, and inflammation, suppuration, or ulceration, or gangrene, takes place, producing great reduction of strength. Thirdly, occasionally great pain is produced by the pressure. This plan, can, therefore, only be judiciously pursued at the very commencement of aneurism."

With respect to the *treatment of the varicose aneurism*, this species appears sometimes within three or four hours after the artery has been wounded in the operation of venesection, or bloodletting, while at others not for several weeks. It has at first a circumscribed appearance, is about the size of a large walnut, with the cicatrix, or mark of the wound made by the lancet, in the centre, and has not so quickly proceeded to that varicose state we have already described as in other cases. It increases very slowly, excites little pain, producing more a sense of weight, numbness, and feebleness of the arm, and is the least dangerous of aneurisms, never rupturing spontaneously, but being liable to be converted into false aneurism, with which it is sometimes complicated, and the dangers of which we have already stated. The general treatment consists in the application of compression and bandage, wearing the arm in a sling, or keeping it in a horizontal position, or, lastly, in securing the artery, which, probably from its being the shorter means of cure, and in the hands of an expert surgeon, perfectly safe, is the best remedy.

Notwithstanding the gloomy prospect that presents itself to the subject of aneurism, there are some redeeming shades in the picture, there being no less than *five* ways in which a spontaneous cure of the disease sometimes takes place; but this can never happen in the aorta or large arteries near the heart, although Petit, a French surgeon, describes the remains of an aneurism he had discovered even of the carotid artery, which had originally been the size of an apple, and after having undergone a spontaneous cure, was found after death not larger than an olive.

"The spontaneous cure in all these five ways," say the writers in Costello's Surgical Dictionary, "is produced on the same principle, viz. the effusion of concreted fibrin within the sac, and a portion of the artery adjacent to the aneurism, and which fibrinous concretion is caused, or permitted to be formed, whenever the circulation of the blood within the sac becomes preternaturally languid. The concreted fibrin is ultimately absorbed, and the aneurismal sac and the artery from whence it originates, gradually contract, the sac becoming a fleshy tumour, and the artery an impervious tube."

ANGELICA, OR ARCHANGELICA. This plant, which derived its name from its real or supposed angelic virtues, is a native of Lapland and Iceland, but has been long cultivated in our gardens.

It rises from three to five feet in height, and has a fragrant odour, and a very warm bitterish, aromatic taste, and these qualities are equally common to the leaves, seeds and root; the latter, however, is the part chiefly used, although the stalk, leaves, and seeds, are occasionally employed. Though the plant is only biennial, Loudon says, "it may be made to continue several years, by cutting over the flower stem before it ripens into seed, in which case it immediately pushes out below." The root, too, by this plan is increased in size.

The root and seeds are stomachic and carminative, and are used in dyspepsia and flatulence, and in the belly-ache of infants. The dose for an adult is from half a dram to three, of the powder of either the seeds or roots; and for a child, the same as of anise seed. A distilled water from the seeds is likewise employed; and a spirit, which when sweetened, sometimes proves a too agreeable dram for the nervous and hypochondriac invalid. The young and tender stalks, and the root, are candied; indeed the latter, when prepared in this way, forms a safe and agreeable sweetmeat, scarcely inferior to candied ginger. It is easily prepared by boiling it in syrup, and covering it up with the same liquid. One pound of the root yields one dram of essential oil, which may be used for the same purposes as oil of anise. The root soon becomes worm eaten. It was formerly cultivated for its leaf stalks, which were blanched and eaten as celery. A few of them cut in small pieces form an agreeable addition to rhubarb or gooseberry pies or tarts.

Two pounds of the seeds bruised, and put in a still, with two gallons of water, and half a pint of rectified spirit, or French brandy, and distilling off one gallon, forms an excellent domestic cordial, which, when sweetened, may be given to children in dozes of a spoonfull when they cry from the belly-ache. A simple water is likewise distilled from the fresh leaves, but is not considered equally agreeable to that yielded by the seeds or roots. We, however, consider Angelica a plant well entitled to a place in the cottage kitchen garden, as well as in the gardens of the middle and higher classes of society.

ANGINA PECTORIS; a disease, the symptoms of which are an acute constrictory pain felt at the lower part of the sternum, or breast bone, inclining to the left side and extending to the arm of the same side, attended with great anxiety, and the same constrictory pain in the region of the heart, difficulty of breathing, tendency to fainting, and a feeling of approaching dissolution, the latter sensation more acute and severe on the patient walking up a hill or rising ground, feeling incapable of proceeding without aid. This affection sometimes comes on after a meal, or subsequent to a longer than usual abstinence, and in course of time the paroxysms recur in the night, after the first sleep. Mental anxiety, derangement of the digestive organs, flatulence and irritations, a torpid state of the bowels, and occasional spasms about the chest, are the most ordinary forerunners of an attack of this disease. The sense of constriction and suffocation, however, is different from that which takes place in asthma, being rather referred to the heart than the lungs. The pulse is not unfrequently irregular and intermitting during the fit, but in other cases there is no perceptible alteration. Angina pectoris principally attacks the male sex, and the individual is sometimes carried off by the violence of a paroxysm, which varies in length or duration from a few minutes to an hour or upwards; nay, is occasionally extended to several hours. In the latter case the disease is of a chronic form, and the fits more frequently occurring during the night, when the patient is in bed, while in the acute or more speedily fatal character of the disease, the attack occurs during the day, and most ordinarily when the individual is walking up an acclivity, as already noticed.

There is, perhaps, no disease, respecting the *causes* of which physicians have been more divided in opinion. The fact is, that it is only of late, or within a period of little more than fifty years, that this affection became recognised as a distinct disease, and the variety of appearances presented by the *post mortem* examinations of the bodies of those who have been carried off by the complaint, may, in a great measure, account for the difference of opinion that exists on the subject. Facts, however, go to prove, that the middle aged, or those who are on the after-side of forty-five years, and who are of robust and corpulent habit, are most liable to the disease, although some have found it equally common in persons of a spare habit. There can be no doubt that the gouty, rheumatic, indolent, sedentary, studious, and especially those who have been long subjected to great mental anxiety, are the most frequent subjects of angina, while there are few instances in which females have ever been subjected to its influence.

Walking, especially at a quick pace, against the wind, up a hill, or rapidly ascending stairs, after a full meal, or speaking or reading aloud in the same circumstances, are all powerful excitants of this affection.

Several continental and some American physicians, among the later Dr Chapman of Philadelphia, consider it as a nervous affection, while Dr Gintrac, who, for the last ten years, has devoted considerable attention to the disease, believes that it is an expression of suffering, originating in the aorta, or vessels in the heart, and in proof of this declares, that he has collected thirty cases of angina pectoris, in which the aorta was either thickened, or dilated, or cartilaginous, or ossified, and that he has met with only ten or twelve in which the organ had undergone no alteration; and among the latter cases he adds, there was not one which bore the character of a case incontestibly belonging to the disease.

Among the cases of inflammation of the aorta published by authors, there are probably some in which the characteristic pain of angina pectoris has not been mentioned. Dr G. thinks this depends on the fact, that the history of inflammation in the large vascular trunks has been scarcely sketched, and that greater part of the observations have been made on patients labouring at the same time under other affections.—*Gaz. Medicale.*

Subsequent observations will either overturn or confirm the truth of these opinions, but as we consider them deserving the consideration of young practitioners and students, who may consult this work, we think it right to give them a more extended publicity.

Asthma is more readily to be mistaken for this disease than any other, but a careful perusal of the article *Asthma* will enable the most inexperienced to distinguish between them. In asthma, the constrictory pain in the sternum, extending to the arm, already described as symptomatic of angina pec-

toris, is never felt; but, on the contrary, a heavy dyspnœa, or difficulty of breathing, wheezing, and cough, which never, or very rarely indeed, ever accompanies the paroxysms of this disease.

When the disease has been preceded by other diseases of a violent kind, or when from improper treatment it has been allowed to remain unrestrained, and there is reason to fear that organic lisions exist, a very unfavourable opinion may be formed of the result. In those, however, of an otherwise sound constitution, and whose health has not been impaired by intemperance, a recovery under judicious treatment may be anticipated.

Those who are subject to this and indeed to every other affection of the heart, should studiously avoid violent exercises, mental emotion, especially anger and sudden gusts of passion, long fasting, and what is equally injurious, too full meals. Exposure of the extremities to cold, and a sudden transition from a heated to a cold atmosphere, especially after indulging in spirituous, vinous, or heating liquids, are extremely hurtful. Indeed warm punch, or toddy, are liquors that should never be swallowed in the intervals of the paroxysms of this disease. The patient should use no liquors stronger than small, spruce, treacle, or ginger beer.

As to medical treatment, especially during the fit, if the patient is of a full plethoric habit, it may be necessary to draw a large quantity of blood. A large sinapism should be applied over the whole chest, and the bowels opened by a warm carminative purgative, such as six drams of the compound tincture of senna, in a wine glass of senna tea, while at the same time an enema of assafetida, combined with half an ounce of the compound tincture of camphor, should be administered. In this case four ounces of the enema will suffice, as it should remain in the bowels till expelled by the purgatives.

In other cases where the pulse is weak, the countenance pale, and the patient of a more delicate constitution, or, it may be, the victim of intemperance, hard study, or long continued mental emotion; or if the fit is attended with a tendency to syncope or fainting, blood-letting should be avoided, but the other medical treatment recommended above, may be employed. The use of anti-spasmodics, especially valerian in the form of a mixture of half a pint of the infusion and two ounces of the tincture, may be given in doses of a fourth part daily. See *Valerian*.

ANGLESEY (*a*). The form of the island of Anglesey in North Wales is triangular, but the shores are irregular, being indented with numerous small bays and creeks. In length it extends about twenty miles from north-west to south-east; its breadth is about seventeen miles, and its superficial area is estimated at 402 square miles. This county was originally divided into three cantreds, but since the junction with England, the division into hundreds has been adopted. These are six in number, Llyfon, Maltraeth, Menai, Talybolion, Twerclyn, and Tyndaethway. These are subdivided into seventy-three parishes, the population of which, in 1831, was 48,300; and in 1841, 50,891. The town is Beaumaris, a seaport and borough, with the market-towns of Llangefni, Newborough, Llanerchymedd, Holyhead, and Amlwch. There are several ports, as Beaumaris, Amlwch, Cremyln, Dulas, Red Wharf, Maltraeth, and Holyhead. A number of small streams descend from the higher grounds, the most important of which are the Cefni, Alan, Fraw, and Dulas.

The climate of Anglesey is mild, but the vicinity of the sea renders it liable to fogs in autumn, when intermittent fevers are not uncommon. The general aspect of the country is level. The most important productions of the island, next to the agricultural, are the minerals. The rich copper and lead veins in the Parys mountain, have been a source of increasing wealth and prosperity to the island, giving employment to a large number of miners. Little coal is found here, so that fuel is dear, and the expense of working the mines considerable. A sort of green marble is found here, resembling the *verda antica* of the ancients. Besides lead and copper, silver, calamine, sulphur, zinc, and alum, are among the mineral productions. In addition to the above-mentioned sources of occupation, many persons are employed in fisheries on the coast, and in the catching of wild fowl. The herring-fishery is lucrative, though uncertain: among other fishes, the cod, turbot, sole, plaices and whiting, are abundant. Many plants, considered rare by botanists, have been found in Anglesey. Anglesey lies on the great line of communication between London and Dublin, and the packets for the latter start from Holyhead. The ferry over the Menai strait was found to be often a serious impediment to travellers, and in 1820, plans for the amelioration of the communication were proposed to a parliamentary committee. The consequence of this was the erection of a magnificent suspension bridge over the strait at Bangor-ferry, and a new line of road from thence to Holyhead.

ANISE SEED, (*a*.) *Anisum Vulgare*, or *the Pimpinella of Linnæus*. The seeds of this plant have a warm, sweetish, grateful taste, with an aromatic odour. They are carminative and aromatic, and peculiarly adapted to the case of children who are subject to flatulent colic, with pain in the bowels. Anise seeds are very effectual for relieving these troublesome affections in infants, as they act in a small dose, and are not in any hazard of inducing bad habits, or stimulating too much, as many other medicines prescribed for relieving children are almost certain to do, such as syrup of poppies, laudanum, Dalby's carminative, Godfrey's cordial, and even strong punch. Nay, all these compositions may be justly charged with the high crime of shortening the lives of infants, and some of them, even of directly poisoning them. Indeed, none of them should ever be employed without regular advice. Punch, it is true, will intoxicate the child, and cause it to sleep; but it will increase the disease, and facilitate its recurrence. The size of a pinch of snuff, or four or five grains of the finely powdered anise seed, or even as much as can be lifted on a silver fourpence or sixpence piece, may be given the child when it cries much, in a tea spoonful of breast or cow's milk, and a warm flannel applied to the abdomen. Or ten drops of the essential oil of anise seed may be dropped on two drams of refined sugar, and the sugar and oil intimately incorporated by rubbing them into a very fine powder, in a stone mortar, (or a tea cup, using a smooth-bottomed vial for a pestle) then gradually adding, while the rubbing is continued, two drams of calcined magnesia. This powder, which may be named or labelled *Sugar of Anise*, should be kept in a close-corked vial, and as much given the child as can be lifted on a sixpence, when it cries or complains of flatulence or pain in the

bowels. This, too, may be given in twice the quantity when the child is costive. Anise seeds are said even to increase the milk of nurses; and "they do indeed," says Dr Cullen, "come off unchanged in it; and sometimes, by condiments of this kind given to the nurses, I have seen them so far conveyed to children who laboured under colics, as to obviate entirely these complaints." Indeed it is a fact which does not now require any proof, that the milk may be impregnated with medicinal qualities by medicines administered to the nurse. There can indeed be no harm in the nurse sprinkling her bread and butter with equal parts of sugar and powdered anise seeds occasionally, as in this way they form a pleasant carminative, especially to those troubled with flatulency, and doubtless tend to stimulate the secretory vessels, and impart a carminative property to the milk. The best stimulus which a nurse can in general employ, is moderate exercise, and a plain nourishing diet, with a contented mind, avoiding spirituous and vinous liquors.

Anise seeds have long been employed in the same form as tobacco, by smoking, in various affections of the chest, as chronic catarrh, cough, asthma, and wheezing. They are frequently ordered in conjunction with stramonium, and in other cases, with colts' foot leaves or flowers, and also singly with great benefit, especially to the aged and those not previously habituated to the use of tobacco. They tend to promote expectoration, and relieve the bronchial tubes of mucus, and they have the advantage of being both a safe and a cheap medicine.

Those, however, labouring under affections of the chest, are not to suppose that the quack nostrums so industriously advertised as balsams and elixirs of anise seeds, and other pectoral drugs, are really what they pretend to be, for they are only disguised tinctures of opium, more or less resembling the old paragoric elixir of the pharmacopeias; and whatever temporary relief they may afford, seldom fail in aggravating the disease.

In procuring anise seeds, it is well before powdering them to examine if they are free of gravel, small stones, and other impurities. The essential oil is frequently reduced; but if of ordinary strength, it will congeal even in summer in a cool shady place. There is an old and excellent formula, called *Compound Anise Seed Water*, which is prepared as follows:

> Anise Seed,
> Angelica Seeds, each eight ounces.
> Proof Spirit,
> Water, each one gallon.
> Draw off, by distillation, one gallon.

This is a very elegant cordial, especially when mixed with one pint of simple syrup to a quart of the spirit. The angelica seeds greatly improve the flavour of the anise; but the liquor is apt to turn out milky unless very carefully distilled or rectified.

APPLEBY; a town in the county of Westmoreland, situated near the river Eden, on the great north road, 226 miles distant from London. It was anciently a place of much greater magnitude than at present, for old foundations have been discovered at the distance of two miles, to which the town and its suburbs extended; and a township, at the distance of about a mile, is still called the Burrals, (Borough Walls.) The town now consists of one broad street, intersected at right angles by three smaller, situated on the slope of a hill, and terminated at one end by the castle, and at the other by the church of St Lawrence. The suburb of Bongate stands on the other side of the river, and is connected with the town by an ancient stone bridge of two arches. The town is well-lighted, and the supply of water is good. It is irregularly built, but many of the houses are respectable. The town-hall is a large ancient building in the principal street. The ancient cloisters, or market-houses, were pulled down in 1811, and a handsome Gothic edifice, after a design by Smirke, erected in their stead. The shire-hall, erected in 1771, adjoins the gaol, which has been lately altered, in conformity with the provisions of the recent gaol act. The castle stands on a steep and richly wooded eminence, rising from the river. It is chiefly of early Norman, if not of Saxon origin, and is built on the site of a Roman fortress, of which only a small portion, called Cæsar's tower, now remains. It suffered much in the wars with Scotland, particularly in the reigns of Richard II. and Henry IV. The greater part of it was rebuilt by Lord Clifford, in the reign of Henry VI. The earl of Thanet is now proprietor of this castle, and it is occupied by his steward. From time immemorial, the judges travelling the northern circuit have resided here, and been entertained at the expense of the proprietor. Population of the town in 1841, 2519.

ARTESIAN WELLS; the term bestowed on springs of water, formed by perforating the earth with boring-rods, until a subterranean body of water be reached, whose sources are higher than the spot where the operation takes place. The effort which water makes to reach its own level causes it to ascend above the surface, and thus a supply of this necessary element is often obtained in districts otherwise destitute. The term is derived from *Artois*, a province of France, where water is chiefly obtained by boring.

The question as to whence Artesian wells derive their supplies is one of the most interesting connected with the subject. The vapours of the atmosphere form one of their sources. A few hours after heavy rains, the miners of Cornwall observe a considerable augmentation in the water contained in some of their deepest pits. The fountain of Nimes, in France, throws out, when lowest, about 280 gallons per minute; but if heavy rain falls in the north-west, although at a distance of seven or eight miles, its volume is increased to upwards of 2000 gallons. The temperature, however, is scarcely changed by this great additional quantity; thus proving that it passes with great rapidity by channels situated very deeply below the surface.

The fountain of Vaucluse, likewise in the south of France, if it received all the rain which fell during the whole year, on an extent of thirty square leagues, would not obtain a supply adequate to the yearly issue which it pours forth. When it rises from its subterranean bed, it in reality forms a river; and the volume of its waters when at its lowest is estimated at 480 square yards per minute, which at times is swelled to 1494 square yards. Its mean volume is 962 square yards. This fountain, it is clear, must obtain its waters from some more abundant source than the percolation of rain-water through the pores and fissures of the earth. Its reservoirs, also, must be capable of containing a great mass of fluid, and the channels by which it flows must be large enough to contain a subterranean river.

These reservoirs and these channels are created by fractures in great areas of stratified rock occasioned by the action of a mighty power, which, at some period, has broken them in various directions. In some cases, these cavities actually withdraw from the surface considerable rivers. The Guadiana loses itself in a flat country, in the midst of a vast prairie: and when a Spaniard hears an Englishman or a Frenchman speaking of the bridges of their respective countries, he will tell them that there is one in Estremadura on which 100,000 cattle can graze. The Meuse and several other rivers in France also disappear in the same manner; some being sucked in by apertures in their bed, situated at various distances along the course of the stream. In the Austrian dominions, the river Poick pursues its course in the cavern of Adelsberg, where its waters lose themselves and re-appear several times. This cavern has been penetrated for the space of two leagues from its entrance, at which point a lake presents itself which has not yet been crossed. Humboldt mentions a cavern in South America, about twenty-five yards high, and twenty-seven or twenty-eight broad, which the traveller can penetrate for 800 yards, into whose recesses are rolled the waters of a stream above ten yards wide. The grotto of Windborg, in Saxony, is also a remarkable instance of the extent of the earth's internal communications, being connected with the cavern of Cresfield, from which it is some leagues distant.

The Artesian fountain at Tours recently presented some phenomena proving the existence of an extensive and complete line of subterranean communication. In January, 1831, the vertical tube by which the waters of this fountain ascended was shortened a little more than four yards, on which its volume was immediately augmented a third; but this sudden increase rendered the water less clear than usual. During many hours there were brought to the surface, from a depth of above 110 yards, various substances, among which were recognised twigs of hawthorn, several inches in length, blackened by their long stay in the water, —stalks and roots of marshy plants,—and seeds of various kinds, in a state which showed that they had been in the water since the harvest, and, consequently, that about four months had been spent in performing their hidden voyage. Shells, and other deposits which a small river, or stream of fresh water, leaves when it overflows its banks, were also brought up during the increased action of the fountain, proving the freedom with which they circulated at the depths below.

An instance is mentioned by M. Arago in the 'Annuaire' for 1835, of one of these subterranean rivers being reached by some workmen who were boring for water close to the Barrière de Fontainebleau, at Paris. As usual, the progress of the work was slow, but, all at once, the boring-rod descended nearly eight yards. When they attempted to withdraw it, it was evident that it was suspended in a body of water whose current was so strong as to occasion the instrument to oscillate in a particular direction.

The temperature of Artesian springs is invariably higher in proportion as their depth increases. The deepest of which we have seen any statement is near Dieppe, and is about 340 yards below the surface. A well formed near Perpignan produces about 425 gallons per minute; and one at Tours ascends more than two yards above the surface, and gives 342 gallons per minute.

In France, the waters of Artesian springs are sometimes made the moving power in corn-mills. At Frontès, near Aire, the waters of ten Artesian springs put in motion the wheels of a large mill, and act besides upon the bellows and forge-hammer of a nail-manufactory. At Tours, a well of nearly 150 yards in depth pours 225 gallons per minute into the troughs of a wheel seven yards in diameter, which is the moving power of an extensive silk-manufactory. Besides their general utility in irrigations, and for purposes of domestic comfort and salubrity, the water of Artesian springs has been specially applied with advantage for other useful objects. The workshops of M. Bruckmarm, in Würtemburg, are warmed by means of water conveyed in pipes from an Artesian spring, the temperature of whose source is considerably higher than that of the atmosphere. M. Arago also states that there are green-houses whose temperature is kept up by means of the circulation of a constant volume of Artesian waters. At Erfurt, they are used in the formation of artificial beds of cress, which produce £12,000 a-year. In the north of France, the reservoirs in which the flax is steeped which is destined to be employed in the manufacture of lace and the finer descriptions of linen, are supplied by Artesian springs, whose waters, being remarkably clear and of an equable temperature, dissolve the vegetable matter with the least injury to the most valuable properties of the plant. In fish-preserves it is often found that the fish are killed both by the severity of the winter and the excessive beats of summer; but this effect of the inequality of the seasons has been prevented at the fish-ponds of Montmoreney, near Paris, by furnishing them abundantly with Artesian waters.

ASPHALTE; a species of pitchy or bituminous stone, which, in ancient times, was much used as a cement in building (see the article *Bitumen* in the body of the work), and which, of late years, has been recommended to public notice, as excellently adapted for covering floors, roofs, for flagging, and for various other useful purposes. Of its modern revivication, we have the following account in Chambers' Journal.

On examining the valley of Travers, in the Prussian province of Neufchatel, about the year 1712, an ingenious, learned, and speculative Greek, named Eirinis, discovered a fine bed of asphaltic rock, and, probably from some recollections suggested to him by his knowledge of antiquity, began to make experiments upon the value of the rock for *cementing* purposes. He describes this rock, or asphalte, as he called it, to be "composed of a mineral substance, gelatinous and calorous, more clammy and glutinous than pitch; not porous, but very solid, as its weight indicates; and so repelling the influence alike of air, cold, and water, that neither can penetrate it; it is better adapted than any other substance to cement and bind buildings and structures of every kind; preserving the timber from the dry rot, from worms, and the ravages of time; so much so, that exposure to the most inclement extremes of weather only renders it the firmer and the more enduring." Such is the account given by Eirinis of his asphaltic cement; and he also states that its efficacy and durability were tried and proved on many buildings in France, Neufchatel, and Switzerland. "Nothing (says he) can be easier than the composition of this cement," and he gives directions for melting it as it is taken from the mine, and stirring it when melted, mixing

with it at the same time ten per cent. of pitch after which it is to be spread on the stone or wood to be coated, previously heated to a slight degree.

Such was the first attempt made, in modern times, to turn the natural production called asphalte to service in building. Eirinis was not supported properly, however, and the Val de Travers mines, though occasionally wrought by succeeding speculators, have only fallen into competent hands within a very recent period. Count de Sassenay, who had acquired the requisite experience by his having been for six years the proprietor and manager of the Seyssel mines, became, in the beginning of 1838, the proprietor of those of the Valley of Travers in Neufchatel. The Seyssel mines, it is to be observed, are also asphaltic, and had been wrought for a number of years. But, on examination, Count de Sassenay found the Neufchatel mines to contain a finer-grained rock, and with two per cent. more of bitumen in it, than the Seyssel mines. He was therefore led to become the purchaser of the former, and has established a company at Neufchatel, with a capital of forty thousand pounds, for the working of asphalte, and for its sale in the various countries around.

Count de Sassenay states, in the Introduction to a little pamphlet which supplies us with these particulars, that there are two kinds of mineral matter which go by the name of asphalte, though erroneously so. The first is an earthy concretion of gritty, loose texture, to which the count gives the name of *bituminous molasse*, and which he ascribes to the latest or tertiary formation of rocks. The other substance is the true asphalte, which is solid, of the colour of soot, and is an admixture of bitumen with calcareous or limestone rock of the Jura formation, which belongs to the secondary era. The bitumen is here completely combined or amalgamated with the calcareous material, and this union is productive of a new homogeneous substance, which *alone is the true asphaltic cement*, or asphalte. Bituminous molasse is a mineral substance comparatively abundant on the continent, and has been wrought in several places with the view of making the same cement, but has not undergone that natural admixture with calcareous matter which constitutes the true asphalte, and hence such views have not been realized. This is not only stated by Count de Sassenay, but by M. Rozet, M. H. Fournel (a noted engineer), and other observers. "Many experiments have been made to imitate the cement we have mentioned (that of Seyssel); but in these operations the want of the calcareous matter has been attempted to be supplied by substances, which, absorbing the bitumen, produce a composition which cannot resist the influence of heat or cold, but is melted by the sun and cracked by the frost." The Val de Travers, where are found the finest kinds, as has been said, of this natural production, formed in all probability under strong volcanic action, leads into the Lake of Neufchatel. Half way up the mountain-sides, the asphaltic works are carried on. "The operations," says M. Fournel, "are very simple, and consist merely in blasting the rock. The cavities for the powder are perforated by wimbles of about thirty-nine inches in length, one of which a man can work as he would a carpenter's auger. This manner of boring appears to be applicable only to the asphaltic stone. The labourers can work better in winter than in summer; because the rock being harder and more condensed in cold weather, the powder has more effect, and the blasting is more extensive." The rock is in blocks or irregular masses, not in strata, and there is reason to believe that the whole mountain is of asphalte. The manner of preparing the rock for cementing purposes is this. "Ninety-four parts (weight) of the asphaltic stone, *pulverised*, are mixed with six parts of bitumen, and melted down in large boilers; and the mass is then poured off and formed into rectangular cakes, which are sold as the asphaltic cement." It is easily re-melted, and instead of losing, gains quality by the repetition of the process. Of late, however, the plan has been adopted of sending the stone itself to the place where it is to be used, and there melting and mixing it with the tar immediately before use. This saves one melting. The way of using it requires little explanation. When melted, the cement is merely spread over the desired part equally, and in such thickness as circumstances may require. In the coating of places to be trodden much, such as footways, terraces, slabs, &c. it is customary to mix fine river sand with it, which gives it more stability, and a degree of roughness that is not unnecessary.

We have now to ask if the asphaltic cement has been extensively tried, and with what issue. Count de Sassenay, when proprietor of the Seyssel mines, obtained permission to use the cement in the fortifications of Vincennes, Douay, Grenoble, and Besançon. The minister of war was satisfied by the experiment that it would be highly advantageous to have the roofs, floors, &c. of barrack-rooms coated, both on the score of cleanliness (inasmuch as the cementing was easily washed), and on account of the protection against damp afforded by it. It was also found that rats and mice disappeared where the cement was laid down. On these facts being ascertained, the French minister of war contracted for the use of asphalte in the various buildings over which he had control. The extensive commissariat magazines at Bercy, and those which supply the garrison of Paris, the roofs, ceilings, and floors of the detached forts at Lyons, the arsenal at Douay, the new barracks at Peronne, those at Mont Louis and other places, were all supplied with asphaltic coatings, in whole or in part. Asphalte was also substituted for the stone pavement in some of the cavalry barracks. The unwearability of the material rendered these experiments most satisfactory. [A staircase, coated with the cement by Eirinis more than a hundred years ago, still remains, and is unmarked, whereas contemporary *stone* stairs in the same building are hollowed out by foot-marks.] The ministers of the Marine and of the Interior in France followed the example of the War Minister, and coated their convict-prisons and other edifices with the asphalte, and with equal satisfaction.

These things passed very recently—subsequently indeed, to the year 1832—when Count de Sassenay became proprietor of the Seyssel mines, from which the asphaltic cement was procured for the purposes mentioned. It was not till 1835 that any experiment was made upon the use of asphalte for flagging thoroughfares. At that time the footway of the Pont Royal was coated with the cement, and its durability, under the tread of thirty thousand people daily, has amply justified the trial. Since that time, the footway of the bridge Du

Carousel, the footway by the railings of the Tuileries, other footways, and the basin of the fountain in Richelieu Street, have been coated with the asphaltic cement, and it has been found to stand equally well the "summer's heat and winter's snow." The Belgians have begun also to use the article extensively in public works. In several parts of London, portions of the street for foot passengers have also been laid with asphaltum, by way of experiment, and on a late inspection by us, it seemed to answer all the purpose of flag-stones. Various artificial cements, in imitation of the natural asphaltic, have been brought before the public, but, on trial, they have been found to crack in winter and to melt in summer—in short, to be totally inefficient in comparison. The asphaltic cement has been used with success in joining stone to stone, or metal to stone. As for its use in the caulking of vessels, we are not aware what has been the result of recent experiments on this point. The induration which forms its chief value in coating pavements and such places, might be injurious in the case of vessels, but an additional proportion of tar to the cement would probably amend this fault, and render it useful there also.

ASSASSINS. This term, applied in Europe to a secret murderer, had its origin in the name of a celebrated Mahommedan sect, who long devastated the east. Under the head *Ishmaelites* (another of their names) we have given a brief account of the sect, but we propose to enter here somewhat more largely into the subject, following the work of M. Joseph von Hammer, a German author, who, from sources purely oriental, has thrown much interesting light upon it. See Foreign Quarterly Review. vol. I.

In the stormy period which succeeded the death of Mohammed, numerous sects sprang up among the believers of Islamism. One of these, the Mazdekee, professed universal freedom and equality, the indifference of human actions, and the community of goods; and, strange as it may appear, it numbered among its adherents Cobad king of Persia. The imprudence of this monarch cost him his crown, and his son Noosherwan, convinced of the pernicious influence of the sect, endeavoured to eradicate it with fire and sword. In this attempt he did not completely succeed, and the immoral opinions continued to exist in secret, until an opportunity offered, when they were again publicly promulgated, and Persia became the scene of blood and devastation.

At this period there lived at Ahras, in the south of Persia, a man named Abdallah, who had been educated in the maxims of the ancient religion and policy of Persia, and whose national animosity induced him to attempt the overthrow of the faith and the empire of the victorious Arabs. The only path to ultimate success, he saw, was to undermine them by secret means; and to effect his purpose, he enveloped his design in the veil of mystery, and in imitation of the schools of India and Pythagoras, communicated gradually his doctrines to his disciples. These consisted of a denial of all religion, with the belief that all actions are indifferent, and that neither here nor hereafter will they be rewarded or punished. With the greatest zeal, by means of missionaries, he disseminated his opinions, and augmented the number of his disciples, until at length one of them was placed on the throne of Egypt, and the new system was established in Africa. But it contemplated farther triumphs, and its missionaries overflowed Asia, in the hope of overturning the throne of the caliphs of Bagdad. Lodges of men and women were formed in different places, and the principles of the sect were taught in regular succession, according to the progress made by the members, or the confidence placed in their discretion. To believe nothing, and to dare every thing, was the sum and substance of this doctrine.

One of the converts to this system was Hassan ben Sabah, who founded, some years after, the society which, during a century and a half, filled Asia with terror and dismay. Hassan was one of those characters which appear from time to time in the world, as if sent to operate some mighty change in the destinies of mankind. Endued with mental powers of the first order, conscious of his own superiority, filled with the most immoderate ambition, and possessed of the courage, patience, and foresight requisite for the accomplishment of his deep-laid schemes, he had been sent by his father, whose orthodoxy was suspected, to Nishaboor, to be educated by one of the most learned men of the East; and there he formed an acquaintance with several noble youths, who afterwards raised themselves to the highest dignities of the state. Even at this early period, the ambitious mind of Hassan, and his sanguine expectations of future advancement and dignity, displayed themselves, and he was not long of seeing them realised. He was taken notice of by the Sultan Melek Shah, and was soon after made his principal confidant. By one of those intrigues common in courts, he was, however, in a short time deprived of the favour of his sovereign, and was dismissed with disgrace. Burning with rage and disappointment, he retired to Rei, and thence to Ispahan, and after a short stay there, he proceeded to Egypt, to join the grand lodge of the Ismaelites, a name which the secret society had assumed, and of which society he had for a long time been a member.

Hassan, whose fame had preceded him, was received in Egypt with the highest honours; but soon after, happening to take an active part in a dispute relative to the succession, his enemies prevailed against him, and he was sent into banishment. He disembarked in Syria, and spent several years in travelling in the different nations of the East, zealously spreading his doctrines, and acquiring proselytes. His ambition now was to possess dominion as well as power, and he fixed his eye on the castle of Alamoot (the vulture's nest), a lofty and impregnable fortress in the district of Roodbar, to the north of Kasveen. This he gained partly by force, and partly by stratagem. So soon as he got possession of this hill-fort, Hassan changed his plans, and instead of publicly treating all religious belief as the effect of a disordered imagination, he determined to maintain among his followers the religious discipline of Islamism in all its rigour. The most minute observance of the most trivial ordinances was exacted from those who, generally unknown to themselves, were leagued for its destruction; and the veil of mystery behind which few were permitted to enter, shrouded the secret doctrine from the eyes of the major part of the society.

The Ismaelite doctrine had hitherto been disseminated by missionaries and companions alone; a third class was required, which, ignorant of the secret doctrine, would blindly obey the orders of their superiors. This class was named Fedavee, or the Devoted. The members were clothed in white, with red bonnets or girdles, and were armed

with daggers. These were the men, who, reckless of their lives, executed the bloody mandates of the Sheikh-el-Jebel, the title assumed by Hassan. As a proof of the fanaticism which Hassan contrived to instil into his followers, we give the following instance. In the year 1126, Hasim-ed-devlit Absoucar, the brave prince of Mosul, was, as he entered the mosque, attacked by eight assassins disguised as dervises; he killed three, and the rest, with the exception of one young man, were cut to pieces by the people; but the prince had received his death-wound. When the news spread that Hasim had fallen by the daggers of the assassins, the mother of the youth, who had escaped, painted and adorned herself, rejoicing that her son had been found worthy to offer up his life to the good cause; but when he returned the only survivor, she cut off her hair and blackened her face, through grief that he had not shared the glorious death of martyrdom.

A display of the means by which the chief of the Assassins succeeded in infusing this spirit of unbounded faith and devotion into his followers, forms an interesting chapter in the history of the human race. Those who reflect on the follies of the disciples of the various fanatics and impostors who have deceived mankind, will not be surprised at the blind devotion of the Fedavee. Even in our own days, the chief of the Wahabees could persuade his followers that he had it in his power to dispose of the mansions of eternal bliss.* It is not undeserving of remark, that the two powers which waged war simultaneously upon Islamism, were both stimulated, by their spiritual heads, with the same prospects of reward. Those who fell in the crusades were pronounced by the Pope to be martyrs, and entitled to the kingdom of heaven; and to the Fedavee who fell in executing the mandates of his superior, the gates of paradise were thrown open, and he entered into the enjoyment of the ivory palace, the robe of silk, and the black-eyed houries. This, it is said by Marco Polo, was no ideal reward. At Alamoot and Masiat in Syria were the most delightful gardens, into which the young novice was, while in a state of stupefaction, the result of some narcotic, introduced; and there, amid a succession of pleasures, presented with a foretaste of the joys of a Mahometan paradise. Ever after, the rapturous vision possessed the imagination of the deluded enthusiast, and he panted for the hour when death, received in obeying the commands of his superior, should dismiss him to the bowers of the celestial paradise.

Here we have the true origin, according to De Sacy, of the term Assassin. Hyde derived it from Hassa, to kill; others from the Jewish Essenes; the prevailing derivation, which is also adopted by Sir John Malcolm, is from Hassan, the first chief; Lemoine was nearer the truth when he derived it from a word signifying herbage, and consequently garden; but, according to De Sacy, whose opinion is adopted by Von Hammer, the true root is hashish, which signifies the bangue, or opiate of hemp leaves; and that the Assassins obtained their appellation from the use they made of the opiate prepared from that plant.

The power of the order now began to be exhibited. By force or by treachery, the castles or hill-forts of Persia in succession fell into their hands. A bloody period ensued; the doctors of the law excommunicated the adherents of Hassan, and the Sultan Melek Shah gave orders to his generals to reduce their fortresses; the daggers of the Assassins were opposed to the swords of the orthodox, and the first victim to Hassan's revenge was the companion of his youth, the great and good Nizamulmulk, the prime minister of the sultan, who fell by the dagger of a Fedavee. His death was followed by that of his sovereign, who was suddenly carried off, not without strong suspicion of poison.

At the period of the crusades, the Assassins appeared in Syria, and, by means of Riswan, prince of Aleppo, acquired fortresses in that country. In Syria, as in Persia, they were persecuted and massacred; and there, also, the dagger amply avenged those who fell by the sword. After a protracted contest in Persia, a dagger was one morning found stuck in the ground by an unknown hand, at the head of the Sultan Sanjer. This reminded him of continued enmity, and induced him to seek for peace. A treaty was in consequence entered into between the Sultan and the sheikh of Alamoot. The Ismaelites agreed on their part to add no more to the strength of their forts, to purchase no arms or military machines, and to make no more proselytes, and the Sultan released them from certain taxes, and assigned them a portion of his revenue as an annual pension.

After a reign of thirty-five years, Hassan ben Sabah saw his power extended over a great portion of the Mohammedan world. Three grand missionaries presided over the three provinces of Jebal, Cuhistan, and Syria, while, from his chamber at Alamoot (which apartment he left but twice during his long reign), Hassan directed the operations of his followers, and employed his leisure hours in drawing up rules and regulations for the government of the order. He died at a very advanced age, leaving no children, for he had previously put both his sons to death, the one for the crime of murder, and the other for trespassing some trifling precept of the Koran. When he felt the approach of death, he summoned his two superintendants, Keah Buzoorg and Abou Ali, before him, and appointed them his successors; Buzoorg to direct the civil and military, and Ali the spiritual affairs of the order.

Buzoorg trod in the footsteps of the founder of the order. Hostilities were renewed between him and the Sultan, and Alamoot fell for a time into the hands of the enemy. But the power of the order had taken too deep root to be easily overthrown, and it soon recovered from its disasters. In Syria, too, though violently opposed, it extended its influence, and it was thus situated when the crusaders first came in contact with its followers. Their first approaches were of a friendly nature, for we find that Aboul Wefa, the Ismaelite Grand Prior, as we may call him, and at the same time chief judge of Damascus, entered into a treaty with Baldwin the Second, king of Jerusalem, to deliver Damascus into his hands, on condition of receiving the city of Tyre as his reward. The enterprise, however, failed; the governor got timely information of the plot; the vizier, the great friend and protector of the Assassins, was put to death; and an indiscriminate massacre of the Ismaelites took place, in which 6000 fell victims.

* A follower of the modern Wahabee, who, a few years ago, stabbed an Arabian chief, near Bassora, not only refused to save his life, but anxiously courted death, grasping in his hand a paper which he seemed to prize far beyond his existence. This when examined proved to be an order from the Wahabee chief, for an emerald palace, and a number of beautiful female slaves, to be given him in the delightful regions of eternal bliss.

Buzoorg departed from the maxims of the founder, by appointing his son Mohammed as his successor. He was a weak and inefficient prince, but his son and successor, Hassan the Second, was of a more enterprising character. His vanity induced him, contrary to the prudent counsels of the founder, to set himself up as a teacher and illuminator, and by his foolish disclosures of the mysteries of his sect, he justified the curses of the people, the excommunications of the church, and the persecution of the order by the surrounding sovereigns. He was, after a short reign, murdered by his brother-in-law and his son Mohammed, who succeeded him. This prince rivalled his father in knowledge, and in the open disregard of all religion and morality. At this period, when the brave Saladin and the crusaders maintained a bloody war in Palestine, the grand prior of the Assassins was Sinan, one of those personages who have at various times in the East gained, by an extraordinary appearance of austerity and devotion in the eyes of the credulous multitude, the reputation of divinity. He gave himself out to be an incarnation of the deity; wore no clothing but sackcloth; was never seen to eat, drink, or sleep; and, from sunrise to sunset, preached from the top of a lofty rock to the assembled multitude, who listened to him as to a god. Notwithstanding the risk he ran, on one occasion, of being murdered by his followers, who discovered him to be only a mere mortal, he retained his influence over them during his life, and at present his writings are held in high veneration by the remnant of the sect which still lingers in the mountains of Syria.

Sinan had read the books of the Christians, and whether from conviction, or, what is more probable, from a wish for peace and exemption from tribute, he sent an ambassador to Almeric, king of Jerusalem, offering, in his own name, and in those of his people, to submit to baptism, if the Templars, their near neighbours, would remit the annual tribute of 2000 ducats which they had imposed on them, and live together in future in peace and amity. The king received the embassy with joy, agreed to all the conditions, offered to reimburse the Templars from his own coffers, and, after having detained the envoy and his suite some days, dismissed them with guides and an escort to their own frontiers. But as they approached their castles, Walter of Dumesnil, who, with a body of Templars, had lain in ambush, assaulted them, and in the fray murdered the ambassador. Almeric, incensed at this treacherous and cruel action, assembled the princes of the crusade, and, by their advice, sent to demand satisfaction of the grand master, Odo de St Amande. The haughty priest gave an evasive answer, which so enraged the king, that he ordered the murderer to be dragged from the habitation of the Templars, and thrown into a prison in Tyre. The perfidious grand master was himself soon after made a prisoner by Saladin, and in the same year perished unlamented in a dungeon. Almeric had no difficulty in exculpating himself in the opinion of Sinan; but all hopes of the conversion of the Assassins were now at an end, and the dagger, after a truce of forty-two years, was again brandished against the crusaders.

Its most illustrious victim was Conrad, marquis of Tyre and Montferrat, the guilt of whose death, both oriental and occidental writers agree in ascribing to the gallant Richard Cœur de Lion. Conrad was attacked and murdered in the market-place of Tyre, by two of the Assassins. The king of England was known to be his enemy, and Albericus Trium Fontium says expressly that the murderers were hired by him. Bohadin, the Arabic historian, thus writes:—"The marquis went to visit the bishop of Tyre. As he was going out, he was attacked by two Assassins, who slew him with their daggers. When taken and stretched on the rack, they confessed that they had been employed by the king of England. They died under the torture." He also observes, that nothing could be settled with Richard, "because he always broke off what he had arranged, by continually retracting what he had said. May God curse him!" Cœur de Lion, however much his countrymen may have wished to make him appear so, cannot we are sorry to say, be declared innocent of the murder of the marquis. We shall not, however, insist upon this point, which has proved a subject of no little dispute, but only revert to the curious circumstance, that we should be beholden to an Arabic author for the knowledge of certain points in the character of a king of England.

The reign of Jellal-ed-deen, who succeeded his father Mohammed, was a period of repose for Asia. He directed all his efforts to restore religion and piety; sent circular letters for this purpose to the caliph and sultan, and other princes; was dignified by the doctors of the law, who were convinced of his sincerity, with the appellation of New Mussulman, and obtained from the caliph the title of Prince, which had never been granted to any of his predecessors. His harem made the great pilgrimage to Mecca, and the caliph gave precedence to his banners over those of many other princes. But his reign was too short to be productive of much benefit to mankind, and on his death, occasioned by poison, the dagger was again unsheathed by his kindred, at the command of his son, Ala-ed-deen, a boy of nine years of age, and the murder of the prince was avenged amid torrents of blood.

Ala-ed-deen, after a disastrous reign, was murdered in his turn, and was succeeded by his son, Roken-ed-deen, who had joined in the conspiracy against him. In his time, the caliph of Bagdad and other princes invoked the mighty Mangoo Kaan to rid the earth of this band of murderers, who rendered life wretched to those who dared to provoke their resentment, and the conqueror of the world gave orders to his brother Hulagoo to exterminate the hated race. His orders were obeyed. The treachery of the chief astronomer and vizier of the Assassin prince facilitated the operations of the Tartars; Alamoot surrendered, and Roken-ed-deen was brought a prisoner to the camp of Hulagoo. The other fortresses of the order followed the example of Alamoot, except Kirdeoo, which for three years resisted the efforts of the Tartar troops, when it fell into their hands. Orders for the indiscriminate massacre of the Assassins, wherever found, were given by Mangoo, and, without distinction of age or sex, they fell by thousands beneath the sword of justice and of vengeance. Fourteen years afterwards, the Syrian branch was destroyed by Bibars, the great Mameluke sultan; and though the sect, like the Jesuits, still clung together, in hopes of once more attaining to power, the opportunity never presented itself. The merchants and peasants who at this day still hold the speculative opinions of the order, are scarcely aware of the bloody part it once enacted on the theatre of the world.

ASSAYING. (*a.*) This process has been very much improved of late years, chiefly by the labours of Gay Lussac in Paris, who turned his attention to it when made master of the mint. The method formerly employed has been explained in the article in the body of the Encyclopedia, under the same title. Its disadvantages, as applied to silver, were the length of time taken in the operation, and its not affording a sufficiently accurate result. The cause of the inaccuracy is, that when silver fuses in contact with air, it absorbs a considerable quantity of oxygen, with which it parts again at a lower temperature. This frequently causes a spirting, and consequent loss of material. The workman was long familiar with this phenomenon of the spirting of the metallic button, but the true cause of it was but comparatively recently discovered. The oxygen is not supposed to be in a state of chemical union with the silver in this state; that is, no oxide of silver is formed, but the oxygen is supposed to be in a state analogous to that in which it exists when in platinum sponge. (See *Absorption*, Supplement.) Another cause of failure arose from the aptitude of a little silver to sink into the pores of the cupel. From these causes, the differences in two trials made with the same silver often amounted to $\frac{1}{2}$ p. c. notwithstanding all the care and attention which could be bestowed on the process. Where the operator was not very careful, the error amounted even to $\frac{2}{3}$, or $\frac{6}{10}$ of a percentage. This uncertainty was particularly felt where the alloy contained from 50 to 90 p. c. silver. In the cases of purer, and also of more adulterated alloys, the process by cupelation gave pretty uniform results. But it is exactly silver of the above content that is most frequently submitted to analysis.

The plan now had recourse to is at once simple and effective, and has proved of immense service in the arts and manufactures. Formerly, from the imperfect state of analysis, manufactured silver articles which should contain by law a certain percentage of silver, were generally made somewhat richer, in order to avoid all risk of collision with the law. The loss sustained in this way, in Paris alone, used to be enormous. Such precautions are now unnecessary. The mode of analysis followed is all but perfect, and the true percentage in silver of the article analysed can be determined with the utmost accuracy. Gay Lussac's plan consists in dissolving a certain weight of the alloy in pure nitric acid, and measuring exactly the quantity of a solution of common salt of known strength, that is, required to precipitate the whole silver in the form of chloride of silver, which is quite insoluble in water and dilute acids. The content in silver is not estimated by the weight of the precipitated chloride of silver, but according to the measure of the solution of salt that is found necessary. It is known that the silver is entirely precipitated when, on the addition of another drop of the solution, no milkiness is produced. In a solution weighing 1000 grains, a quantity of silver, amounting to the $\frac{1}{100}$ of a grain, causes a distinct milkiness; and if the solution be allowed again to clear itself, the precipitation of the $\frac{1}{100}$ grain may still be observed. The milky solution should be strongly shaken a minute or two, when in a few seconds it becomes clear enough to admit of any further precipitation being seen. If we suppose the quantity of alloy operated on to be 10 grains, the exact quantity of common salt necessary to precipitate 10 grains of pure silver should be dissolved in a vessel graduated to 1000 parts. It will be obvious, that whatever part of the 10 grains be silver, must be indicated by the measure of the solution that is required before an additional precipitate cease to be formed, when a drop of the solution is added. The presence of lead, copper, or other metals, does not alter in the least the quantity of common salt required. In the manner above described, a much greater degree of accuracy is attained than is possible by the process of cupelation, and where many trials are made much time is spared. The chloride of silver which is precipitated, is not thrown away, but is reduced, by bringing it well washed in contact with pure muriatic acid, and iron, or zinc; chloride of zinc or iron is formed and dissolves, while silver, in the metallic state, remains.

The process for assaying gold has been so imperfectly described, that it may be well to add here a short additional description of the process really employed. The piece of gold is first tried with the needles and test-stone. These needles are composed of different alloys of gold with silver and copper. The test-stone is a variety of black-slate. A streak is first made with the alloy, to be tested by rubbing it upon the test-stone, and beside that, another streak with a needle, the composition of which is known, and which is supposed to be nearest that of the alloy under examination. If the streaks resemble each other in colour, to determine which a considerable amount of experience is required, the alloy is supposed to have the same composition. When by these means the composition of the alloy is approximatively determined, it is hammered out into thin sheets, and mixed with $3\frac{1}{2}$ times as much pure silver as there is of gold; and to this mixture is added three or four times its weight of lead, and the whole fixed together in a cupel. The gold and silver remain behind, the copper is oxidated and sinks into the pores of the cupel, along with the lead. The gold is then separated from the silver by solution in nitric acid. For the success of this operation, it is essential that the gold amount to about $\frac{1}{4}$ of alloy of gold and silver, as in this case the gold that is left retains the form of the alloy, and can be readily taken out, washed with pure water, and weighed.

ASTORIA; the name given to a small fort, or trading post, formed by Mr Astor, at the mouth of the Columbia river, as a settlement for fur traders belonging to the company which he undertook to establish. One of the main objects in this commercial enterprize was to establish a company of traders belonging to the United States, as a rival to the great North-West Company, the Mackinaw Company, and other associations belonging to Great Britain, and thus to cause the traffic in peltries, and the wealth arising from it, to centre in New York. On the breaking out of the war between Great Britain and the United States, Fort Astoria fell into the hands of the British, and the trade in peltries was forthwith engrossed by the North-West Company and other associations. See Washington Irving's interesting work, entitled "Astoria."

ASTRABAD. See *Persia*, in Supplement.

ATHLONE; a town of Ireland, situated on both sides of the Shannon, fifty-nine miles west from Dublin. It is conjectured that Athlone is only a corruption of *Ath-Luain*,—Moon Ford, or Ford of the Moon. The portion of the town which lies on the eastern bank of the Shannon was termed English Town, and is situated in the county of West-

meath and province of Leinster that on the western bank was termed Irish Town,—it was the part most strongly fortified, and is situated in the county of Roscommon and province of Connaught. On the Connaught side of the river there is a castle, said to have been erected, or at least enlarged and strengthened, by King John. This castle, which has been re-edified in a modern style of fortification, commands the bridge which connects the town,—was once the residence of the lord-presidents of Connaught, and has been the scene of stirring events. The bridge was built, in the reign of Queen Elizabeth, by Sir Henry Sidney, Lord Deputy of Ireland, and has survived the accidents of war, as well as the wear of time and traffic. It is only twelve feet wide; and being the highway from Connaught into Leinster, it is a great thoroughfare, and is often disagreeably thronged. In the centre of the bridge is a stone monument, bearing an inscription, nearly obliterated, setting forth that, "in the ninth year of the reign of our most dere soveraign ladie Elizabeth, this bridge was built by the device and order of Sir Henry Sidney, knt., who finished it in one year, by the good industrie and diligence of Peter Levis, clk., Chanter of the Cathedral Church of Christ, Dublin, and steward to said deputy."

The town of Athlone was incorporated by charter from James the First, and received a further charter from Charles the Second. What chiefly renders the town of importance is its being a station, or government depot for troops and military stores. There are barracks for the reception of 2000 men, to which an ordnance-yard, magazines, and hospital are attached. Some trade is carried on by means of an extensive brewery and two distilleries, and by the manufacture of felt-hats. Markets are held three times a week. Athlone is well situated for trade. The Shannon is navigable for thirty-eight miles farther up than the town; the navigation, which is interrupted by the bridge and ford, being continued by means of a canal, cut on the Connaught side of the river, by which also the distance is shortened, as the Shannon makes here a considerable sweep. The Grand Canal, also, which communicates with Dublin, joins the Shannon seventeen miles below Athlone. Population in 1841, 6393.

AUSCULTATION, AND PERCUSSION, in medicine; terms applied to the methods used to ascertain the seat and nature of disease, by the signs which may be recognized by the sense of hearing. They comprise the study of all sounds indicative of disease, whether heard by the unassisted ear, or through the medium of instruments, and whether arising naturally, or produced artificially.

From the earliest ages, physicians have known that disease in the cavity of the chest might occasionally be detected by the ear; but it was not till about seventy years ago that any express rules were laid down upon this subject. The merit of being the first methodical auscultator is due to Dr Avenbrugger, a physician of Vienna, who published a short treatise on this subject in the year 1761. It is written in Latin, and is entitled, "A New Discovery of the Art of Detecting Diseases in the Interior of the Chest by Percussion." When the chest of the patient is struck by the fingers of the physician, if it is healthy, it gives a sound, says Dr Avenbrugger, like that of a drum covered with cloth; whereas, if it is diseased, the sound produced is as if solid flesh had been struck. In performing this examination, the chest of the patient must be covered with his shirt, or else the fingers of the physician with a glove, which must not be made of glossy leather; for if the bare chest is struck with the bare hand, the concussion of smooth surfaces produces an external sound which obscures the internal one. The following general rules are clear, correct, and well-expressed:—

The duller the sound is over the chest, and the nearer it approaches the sound of solid flesh, the greater is the disease.

The larger the space over which this dulness extends, the greater is the disease.

It is worse for the left side to be affected than the right.

It is less dangerous that the front and upper part of the chest (viz., from the collar-bone to the fourth rib) should be destitute of sound than the lower part.

If one side of the chest is entirely destitute of sound, it is a fatal sign.

If the sternum (viz., the front and central part of the chest) is without sound, it is a fatal sign.

If the place which the heart occupies gives the sound of solid flesh over a great space, it is a fatal sign.

Dr Avenbrugger's little manual is not confined solely to the signs afforded by percussion; in many instances he gives a succinct but masterly outline of the general symptoms by which various diseases of the chest may be recognized. In offering his work, the fruit of seven years' observation, to physicians, he remarks, that, in treating diseases of the chest, the sound obtained by percussion is inferior in importance only to the pulse and respiration. Avenbrugger's work has never been translated into English; but there is a French version of it by Corvisart, in which the brief axioms of the German physician are illustrated, and almost overwhelmed, by a most copious commentary. This translation, however, is a valuable work, and an additional step in the art of auscultation. With this exception, but little advance seems to have been made from Avenbrugger to Laennec, the distinguished inventor of the stethoscope, (see *Stethoscope*, in the body of the work.) This is a tube, usually made of wood, one end of which is applied to the chest of the patient, and the other to the ear of the physician. By this contrivance, the sound of the patient's respiration, as well as voice, is transmitted in the most distinct manner, and the minutest variations from the healthy standard can be distinguished by a practised ear. In children, for instance, the sound produced by respiration is louder and more acute than in adults; but this acute breathing often occurs in grown-up persons, when, one lung being diseased, the other is forced to do work for both. It is known among stethoscopists by the name of *puerile* respiration. Or, let us suppose a patient in an advanced stage of consumption, in whose lungs cavities have been formed by the suppuration of tubercles; if the stethoscope be applied to the chest of such a patient when he is speaking, his voice will be heard echoing from the cavities in his lungs: this morbid resonance is called *pectoriloquy*.

The principle, on which auscultation and percussion are applied to the detection of disease, is sufficiently plain. Indeed, it is often used in the common affairs of life. The carpenter strikes his hammer against the wall, to ascertain where to

drive his nail "in a sure place." The spirit-dealer knocks upon the head of his cask, to learn the quantity of liquor contained in it. With precisely the same view, the physician thumps the chest of his patient, that he may judge of the state of the organs by the sound which is given forth.

The chest is an enclosed cavity, containing, and in the natural state filled by, several organs of different degrees of density. Of course, the part corresponding to each organ gives a dull or a resonant sound, according as the organ is firm and solid, or light and porous. Much the greater portion of the chest is occupied by the lungs. They are of a light and spongy texture, partly filled with blood, and partly with air. The sound they emit is intermediate between that of an empty cavity, or one filled with air only, and a collection of fluid, or a solid organ. In the neighbourhood of the lungs is the heart on one side, and the liver on the other, both solid organs; the latter, indeed, not strictly in the same cavity, but capable of pressing upon the others. If either of these is increased in size, so as to encroach upon the lungs, the existence and the extent of the encroachment will be shown by a flat sound in the place of the natural resonance.

If the membrane which lines the cavity of the chest becomes inflamed, a fluid is gradually poured out into the cavity, compressing the lungs, and occupying their space; and then a flat sound is the consequence. Or, the same space may be filled by air, introduced either by a wound, or as the effect of disease; and then the sound on the other hand is unnaturally resonant. The structure of the lungs itself is also liable to be changed by disease. On the one hand it may be *emphysematous*, too much distended by air, when the sound is hollow. On the other hand, it may be rendered unnaturally solid, either by a pressure of blood, or by inflammation, or by the formation of tubercles; either of which will cause the sound to be dull or flat in proportion to the extent of the disease.

It is not our purpose to go into particulars, and show how all the several affections are distinguished from each other. Such details belong to the physician, and must be studied by him with industry and care. The distinction is made partly by other considerations, and partly by differences in the percussion itself. We may give an example by way of illustration, of the extent to which this mode of investigation may be carried. We have said, that fluid in the chest, congestion of the lungs, inflammation, and tubercles, all cause a flat sound. How shall we know one of these from the rest? The formation of tubercles is a slow process, and the disease they produce is chronic; and it is attended by circumstances quite unlike those which ordinarily accompany the others. For this reason there can generally be little question between them. But this is not all. Tubercles are almost always first deposited in the upper portions of the lungs, while inflammation as generally occupies the middle and lower portions. In any case, therefore, where the disease has not advanced so far as to leave no room for doubt, if the flatness be in the upper part of the chest, the presumption is strong in favour of the existence of tubercles; if in the lower part, it is something else. In like manner, a crowded state of blood in the lungs is ascertained, chiefly by means other than those we are now considering. Between a collection of fluid in the chest, the result of acute inflammation of the lining membrane, and inflammation of the lung itself; that is, between pleurisy and pneumonia, the distinction is not so easy. Both are acute diseases; and both give rise to many of the same symptoms. Indeed, so much alike are they in these respects, that it was formerly said to be impossible to distinguish them. Yet the importance of their effects is widely different. The one is a grave disease and often destroys life, the other is rarely fatal. And the treatment required by each is often very unlike. Here, too, we are by no means restricted to the use of percussion. Other modes of examination serve to explain, or correct, or confirm, as the case may be, the results of this. But we must show what this can do.

We have seen that, in pleurisy, the flatness of sound is caused by a fluid poured out into the cavity of the chest, taking the place of a portion of the lung. The flatness is consequently complete so far as the fluid extends, and there stops abruptly. In inflammation of the lung the condensation, and the consequent flatness, are complete only at the part most highly inflamed, and diminish by a more or less gentle gradation towards the healthy portions. This flatness, too, is constantly observed in the same place, whatever may be the position of the body, whereas in pleurisy every movement of the body causes the fluid to flow to the lowest part, and consequently changes the seat of the flat sound. These different circumstances are not always enough of themselves to establish a perfect diagnosis between the two diseases. But they go far towards it; and, taken in connection with the results of the other principal mode of exploration, they rarely leave any just cause of doubt between them.

In detecting diseases of the heart, percussion, regarded by itself alone, will do little more than to point out an enlargement, without showing its precise character, or whether it be an enlargement of the heart itself, or a distention of the pericardium by a fluid. There are other means of making these distinctions, with a greater or less degree of certainty.

The organs of the abdomen are less concealed from observation than those of the chest. The walls of the cavity are yielding, so that any considerable change in the size, or texture, or position, may be detected by pressure; a mode of examination now learnedly called *palpation*. Percussion is often useful, however, in diseases of these organs. It enables the physician to discover their precise condition with greater accuracy, to detect with more certainty the nature and extent of any enlargement of an organ, or the existence of any morbid growth, or the accumulation of a fluid.

At first, percussion was performed with striking with the ends of the fingers directly upon the part examined. But this is liable to serious objections. Besides that it sometimes gives pain, there is an uncertainty in the resonance, in consequence of the difference of texture in the several parts struck upon. The present practice is, therefore, always to interpose something to receive the blow. A variety of substances have been used for this purpose. An ivory plate has been much commended and much used; others prefer a piece of India rubber; and many use only a finger of the left hand. The circumstance, that the finger is always at hand, while any other *pleximeter* adds something to the already cumbersome apparatus of the physician, is much in its favour; though in general, that will practically be the best in the hands of any practitioner, which he is most accustomed to use.

The degree of resonance on percussion is very considerably modified in different persons by the form and bodily condition of the patient. The chest of a thin, spare person, gives a much louder and clearer sound than one which is well clothed with fat and flesh. All this is easily taken into consideration by the physician, so that he is in little danger of mistaking an accumulation without the chest for disease within. A comparison between the two sides of the chest gives additional security against such a mistake. In some parts, it is true, the organs are different in the two sides; but to a considerable extent they correspond. It is also true, that the same state of disease may exist in the corresponding parts, so as to obscure the results of a comparison between them. But this is extremely rare. In general there is a marked difference in the sound of the two sides in most cases of decided disease. To take advantage of this comparison, it is of course necessary, that the practitioner be accurate in his knowledge of the anatomy of the parts, or he may confound the flatness produced by striking upon a solid organ for that of diseased structure.

The practice of auscultation is founded upon principles of physical science equally well established. Sounds, which are caused by certain actions within the cavities of the body, are transmitted through the walls of the cavity, and are perceived when the ear is applied closely to the surface, or through the intervention of a proper instrument. These sounds are always alike under like circumstances, and are changed when the circumstances which caused them are changed. Hence the physician, if he render his ear familiar with the sounds caused by the internal actions of the body in a healthy state, will readily perceive a variation, when the part is diseased. What disease is indicated by any particular unnatural sound, he can learn only from repeated and extensive observations. But that there is a deviation from the natural state, he will perceive at once; and the accumulated observations of all the physicians, whose attention has been directed to the subject, have now gone far to explain most of the deviations which have been noticed.

These principles are chiefly available for practical purposes in reference to the actions of the lungs and the heart. The air in passing through the windpipe gives rise to a certain sound, which in health is always nearly the same. This sound is modified in the smaller tubes (the *bronchia*) into which the windpipe divides, and again still more decidedly in the little air vesicles in which the *bronchia* terminate, and which occupy every part of the lungs. These several sounds are readily perceived and easily distinguished by a *practised* ear, applied to the corresponding part of the chest and neck. Hence we have *tracheal*, *bronchial*, and *vesicular* respiration; and if these are heard only in their appropriate places, and in a right degree of force, they indicate a healthy state of the parts.

When a portion of the lung is diseased, the current of air in that part is either obstructed or its natural force changed, and of course the sound is modified. Hence, by applying the ear extensively over the chest, we are unable to detect the existence, and the precise seat, and generally the nature, of the disease. In inflammation of the lungs, the air cells are for the time obliterated in the part affected. As there are no vesicles for the air to enter, there is no vesicular respiration. But we have, what would not at first view be anticipated, *bronchial* respiration in its stead. In the healthy condition of the lungs, the porous character of the vesicular structure renders it a bad conductor of sound, so that the sound caused by the air in the bronchial tubes is not transmitted through them. But when they are consolidated by disease, they become good conductors of sound; and, at the same time, the morbid condition of the parts gives a greater degree of intensity to the sound itself.

Bronchial respiration, then, heard in the place of vesicular, always indicates—inflammation? That would be a simplicity in the art of distinguishing diseases, which nature does not tolerate. But it always indicates a consolidation of the lung from some cause, and inflammation is one of the most frequent of the causes. Another, and unhappily a frequent cause, is the deposition of tubercles, in incipient consumption. As in regard to percussion, so in reference to auscultation, there are means of distinguishing between the several morbid affections, which give rise to phenomena in many respects similar. These it is the business of the physician to study, and they often exercise his ingenuity and industry not a little. But it would lead us too far to attempt to explain them here.

There are other morbid sounds in the respiration, besides those which arise from what we may call the misplacement of such as are healthy. When the membrane which lines the air passages is inflamed, as in common cold or catarrh, its surface is at first unnaturally dry; and in that state the current of air through the tubes gives rise to various sounds more or less musical, which are the different modifications of the *sonorous râle*.* At a later period the membrane becomes more than naturally moist, and the passages are crowded, and more or less obstructed, by an adhesive fluid. In this state, if the ear is applied to the chest, the air is heard bubbling through the mucus, and this is the *mucous râle*. Inflammation of the substance of the lung, in its earlier stage, before the air vesicles are obliterated, is accompanied by a still different *râle*, the *crepitous*. In the advanced stage of consumption, a cavity, sometimes more than one, is formed in the lungs, at first filled with purulent matter, which is afterwards discharged through an opening into a bronchial tube. The air as it rushes into, and out of, this cavity, in every respiration gives rise to a peculiar hollow sound, which is the *cavernous râle*. If the cavity is very large, and the opening into it from the bronchia small, the sound resembles that caused by blowing into the mouth of an empty bottle (*amphoric resonance*). The same sound is produced when air escapes into the cavity of the chest, compressing the lung; which is sometimes the result of an accidental injury, and sometimes of ulceration.

The sounds of the voice give still farther aid in detecting and distinguishing the diseases of the lungs. In the healthy state of those organs, no peculiar sensation is communicated to the ear, unless it be applied over the windpipe, or over the larger bronchia at the root of the lungs. But

* There is a good deal of difference of opinion as to the best term to designate these morbid sounds. Some writers use the English word *rattle*, and others the Latin *rhonchus*. We prefer to adopt the French *rale*, used by Laennec. Where the thing to be expressed is new, it is better to adopt a new word, than to assign a new meaning to a word already in common use. As no new English word has been proposed, we can only do this by borrowing from a foreign language; and the French term was first introduced, and is more extensively used, and more agreeable to the ear than the Latin.

where a portion of the lung is condensed, whether it be by inflammation, or tubercles, or by the infiltration of a fluid into its substance, a resonance of the voice is transmitted to the ear at the corresponding part of the chest, resembling that from the bronchial tubes, and thence called *bronchophony*. When there is an empty cavity in the lungs, the sound is still more remarkable. The voice seems to enter the ear, as if the mouth of the speaker were applied closely to it. This speaking from the chest (*pectoriloquy*), when strongly marked, is a very decided characteristic of confirmed consumption, and sometimes gives evidence of a hopeless condition of that deceptive disease, long before the symptoms have led the patient to feel any apprehension. Dr Williams says of it, "More than once has it occurred to me, that the very words, which in that delusive confidence with which this malady enshrouds its victims, ridiculed my examination of the chest, roundly saying, that nothing ailed them there, have belied their meaning, and, coming from the breast, have told a far different tale." A modification of the voice, of a different character, is observed in some states of the chest in pleurisy. The voice comes to the ear through the walls of the chest, not in its clear natural tone, but in a vibrating, thrilling, squeaking sound; like the bleating of a goat (*hægophony*).

Auscultation is applied to the investigation of the diseases of the heart as well as those of the lungs, although the actions of this organ are more obscure, and the phenomena which attend them are less understood. On applying the ear over the region of the heart, we perceive, in the first place, the impulse of the heart beating against the ribs; then we hear two distinct sounds, following each other at every pulsation, in regular succession. By habitual practice we learn to distinguish the natural force of the impulse, as well as its natural extent and limits, and the regular cadence or rhythm of the successive sounds, and to appreciate the difference if either is changed by disease. The diagnosis of the particular diseases of the heart and large arteries is still involved in much obscurity. Considerable progress has been made in the knowledge of them within the last few years, and much may be hoped from the investigations which are constantly going on. As it is, we are in general able to distinguish with confidence between the actual changes of structure in that organ, and the nervous, and sometimes imaginary affections, which have often, in past times, been confounded with them. And, in many cases, if not in most, we can ascertain the particular character of the morbid affection, and give a tolerably sure prognostication of its termination. There is here consolation in the fact, that some of these diseases, which were formerly classed together without any other distinction than "diseases of the heart," and regarded alike with terror, as surely fatal, excite very little alarm, now that their true character, and the means of distinguishing them, are better known.

Enlargements of the heart, or its envelope, are easily detected by the greater extent over which the impulse and the sounds of its action are perceived, and by the absence of the sound of respiration, in consequence of the encroachment of this organ upon the lungs, as well as by an enlargement of the corresponding part of the chest, and a change in the sound on percussion. But a knowledge of the general fact of an enlargement is not enough. We wish to know, whether it be a simple dilatation of the cavities of the heart, or the thickening of its muscular substance, or a distention of the pericardium by a fluid. And each of these has its appropriate, characteristic marks, so as to leave little cause of doubt between them. The membrane which covers the external surface of the heart, and that which lines its internal cavities, and occasionally also the muscular substance itself, are liable to inflammation; its numerous valves are exposed to various diseases; and both its cavities and its orifices are subject to unnatural dilatation or contraction. Most of these changes can be detected with a greater or less degree of confidence during life, and some of them are capable of successful treatment. We shall not trouble our readers with a description of the different sounds heard in the several diseases, as we have done in regard to the lungs; partly because these sounds are less fully understood, and partly because we are afraid of wearying them with so many details.

Let us now see how these two modes of exploration, *percussion*, and *auscultation*, bear upon each other. We have thus far examined them only in their separate capacities. In their relations to each other, they do much to correct or confirm the results obtained from either separately. In all diseases of the chest, besides the knowledge obtained from the symptoms, we have two distinct modes of observation. If the inferences drawn from the sounds on percussion are confirmed by applying the ear to the chest,—and, in regard to the lungs, we have both the respiration and the voice to reveal their secrets to us;—and especially if these inferences are in accordance with the symptoms, we may feel an assured confidence, that we have come to a just knowledge of the disease.

A man has pain in the side, with difficulty of breathing, attended by more or less fever. All this may arise either from rheumatism in the muscles, or from pleurisy or inflammation of the lung; and the symptoms alone will not always tell which is the disease. If it be rheumatism, we are not likely to find any external sign of it, except perhaps some feebleness of respiration, on account of the difficulty of expanding and contracting the chest. If the disease be pleurisy, we shall have flatness on percussion, in the lower part of the side affected, changing its place if the patient changes his position, so as always to keep the lowest part; absence of all sound of respiration in that part, while the respiratory sound is louder than natural in the surrounding parts; and generally hægophonic resonance of the voice. If it be inflammation of the lung, there is dulness on percussion, increasing, as the disease advances, to flatness, retaining the same place in all positions, not bounded abruptly by healthy resonance; crepitous *râle* in the respiratory sounds, at first, followed by bronchial respiration and bronchophony. These several characteristics, however obscure they may seem in the description to many of our readers, to an intelligent and experienced observer will perfectly designate the character of the disease, so as to leave no doubt whatever in his mind. The disease may, indeed, be complicated, and then the evidences of its nature will be so too; and so will be the treatment that it will require.

A more interesting case is unhappily also much more frequent. A youth, just ripening into manhood, gradually loses his ruddy colour and vigorous strength; he loses flesh, and occasionally a

slight cough alarms the fears of his friends, though he himself thinks it nothing but a trifling cold. On examination, a slight dulness is observed at the apex of one lung,—so slight as scarcely to be appreciated except by comparison with the opposite side. The respiratory sound is at first remarkably feeble at that part, or a little later there is bronchial respiration and bronchophony. These are sure indications, that the way is already prepared for consumption. Still there is hope, if a proper regimen can immediately be begun and persevered in; for direct remedies can here do but little. Too often, either the patient is not alarmed early enough, or, in despite of every precaution or effort, the disease advances. Bronchial respiration is followed by a mucocrepitous, and then by cavernous *râle*, bronchophony by pectoriloquy, and so on till life is destroyed, each step of the destructive process being clearly revealed by the sounds elicited in successive examinations.

But what avails it thus to trace the melancholy progress of a disease which we have no power to arrest? There is some consolation in knowing the just amount of what we have to fear, however great that amount may be. And, if we have no remedies that are able to reach this formidable disease, who shall say, that we shall never have them? The first steps towards acquiring them must be taken in obtaining a full knowledge of the disease. We can now do something towards prolonging life, and diminishing suffering. We can at least abstain from doing harm by vain attempts to effect what is impossible. Above all, by an early discovery of the disease, we may teach our patient to flee from the danger before it overtakes him. In very many cases, a careful examination of the chest will detect unequivocal evidence of approaching consumption, long before the symptoms excite any considerable apprehension. At this early period much may be done to avert the danger. And if the attention of physicians and patients were more directed to this period, much more might doubtless be done to diminish the fatality of consumption than ever has been.

If it be asked, on which we are the most to depend for the elucidation of disease, the investigation of symptoms, or an examination by physical signs, we answer, that there is no opposition whatever between them. The use of direct exploration does not preclude a careful inquiry into the symptoms of the case. On the contrary, it prompts to a more full investigation. In practical life, it certainly is true, that those physicians who most constantly make use of the benefits of exploration, are not only equally, but generally much more, thorough in their inquiries into all the circumstances of a patient's health, than those who neglect or ridicule it. This may be partly because those, who are the most zealous in their researches, are the most willing to take the trouble requisite to acquire a new method of investigation, when it promises adequate advantages. But this is not the whole of it. There is something so grateful in comparing the results of different modes of examination, that, were it a mere matter of speculative philosophy, the mind would necessarily be stimulated by the comparison.

There are still some physicians, who laugh at the whole matter of direct exploration as either idle foolery, or empiricism. But they are those who have never taken the pains to learn how to practise it; were there no more advantage in it than they know how to obtain from it, their ridicule might be better founded. Whether their ignorance be the effect of indolence or incompetence, it becomes us not to say. But, while they laugh, others will learn; and the time is not far distant, when the physician, who is unable to practise percussion and auscultation, will be held to be unfit for his profession.

AUSTRALASIA, (*a.* to the articles *Australasia, Holland, New, New South Wales,* and *Swan River.*) *Australasia,* from *Austral,* southern, is supposed to comprehend the islands of New Holland, Van Dieman's Land, Papua or New Guinea, New Britain, New Ireland, Solomon's Islands, New Hebrides, New Caledonia, New Zealand, Kerguelen's Islands, and the islands of St Paul and Amsterdam, besides numerous reefs and islets of coral scattered over the Australasian sea. *Australia* implies New Holland alone, or, at the utmost, New Holland and Van Dieman's Land. The term, indeed, as applied to *New Holland* alone, has come of late years so much into use as to supplant almost altogether the old name of New Holland; and to this modern and limited sense of the term the present article will be confined. Whatever additional information may require to be given regarding the other islands of Australasia, will be found under their respective heads.

AUSTRALIA, OR NEW HOLLAND, the largest island in the world, being about equal in surface to three-fourths of the European continent, extends between the parallels of 39° and 10° 30′ south latitude, and the meridians of 112 and 153° 40′ east longitude, with a length from E. to W. of 3000 miles, a breadth from N. to S. of 2000 miles, a superficial area of more than 3,000,000 square miles, and a coast line of 8000 miles. We find considerable descrepancies in the statements of different authors regarding its measurements: we have given here in round numbers what we consider to be nearest the truth. It is washed by the Indian ocean on the west, and by the Pacific on the east; to the south lies the island of Van Dieman; and on the north it is separated from New Guinea and the Moluccas by the straits of Torres and of Timor. Timor, the nearest of the Asiatic islands, is about 280 miles distant from Cape Talbot. Much of this vast island remains to be explored; but the prevailing feature of its surface, so far as yet observed, is barren and wooded plains, traversed by long ridges of precipitous but not very lofty mountains; and rivers, which often spread into marshes, and do not preserve any course which may be called long when compared with the size of the country. A great part of the land, through the mixture of broad mountain masses and of heavy inundated plains, is rendered unfit for cultivation, and even for travelling. These obstructions, however, do not prevent the occurrence, on a great scale, of fine meadow tracts, where the richest herbage grows spontaneously, and where industry may raise the most plentiful crops. The mountains of Australia form a ridge nearly round it, rocky, and in many parts almost inaccessible. The Blue Mountains, in particular, which rise behind the colony of New South Wales, tower up almost like a wall; their cliffs being so steep, and separated by such dreadful abysses, as to have been long considered impassible. Yet they do not exceed in height the mountains of Scotland, their highest summits not being much more than 3000 feet. It was not till 1813

that a route was discovered through them, which has since been made completely patent.

Of the discovery of Australia, and other matters connected with its history and physical geography, the reader is referred to the articles mentioned above, to which this forms a supplement. We here confine ourselves to the British settlements in the island, which, as points of emigration, have, of late, excited unusual interest throughout the empire. These settlements at present consist of New South Wales or Eastern Australia—Southern Australia—and Western Australia, or Swan River settlement.

*New South Wales* extends about 1500 miles along the eastern coast of Australia, and two or three hundred miles inland. Its boundaries are but imperfectly, if at all defined. It lies at the distance of 16000 miles from Great Britain, and being on the opposite side of the globe from us, its seasons are reversed in relation to ours; its summer being in November, December, and January, and its winter in May, June, and July. It has now been divided into counties, certain districts being called, respectively, Cumberland, Camden, and St Vincent, on this side of the Blue Mountains; Westmoreland, Georgiana, King, Argyle, and Murray, to the South; and Roxburgh, Cook, and Bathurst, to the west of that great barrier. To the north of Sydney, divided by Hunter's river and the county of Hunter, are placed the counties of Northumberland, Durham, and Gloucester on the east, and Philip, Wellington, Brisbane, and Bligh, on the west of the dividing mountains.

*Cumberland* embraces that portion of New South Wales which was first colonized, and it is still the most populous district. It has about 56 miles of coast, comprehending the noble harbours of Broken Bay, Port Jackson, and Botany Bay. Behind, the river Hawkesbury, with its tributary stream, the Nepean, makes an entire circuit round it; beyond which the broad and steep mountain ridge shuts in the county, leaving to it a breadth of only forty miles. The soil on the coast, as is the case generally throughout the island, is light, barren, and sandy. In the interior it improves, and yields tolerable crops. This province has already four towns of some importance—Sydney, Paramatta, Windsor, and Liverpool. Sydney, the capital of New South Wales, is situated on the cove which bears its name, about seven miles inward from the head of Port Jackson. From an entrance not more than two miles across, Port Jackson gradually expands into a noble and capacious basin, having depth of water sufficient for the largest vessels, and space in which a thousand sail of the line might manœuvre with ease. It stretches about thirteen miles into the country, and branches into not less than a hundred small coves, formed by necks of lands, which afford excellent shelter for vessels in all winds. From among these, Sydney cove was selected. It is more than half a mile long, and about a quarter broad at its mouth, whence it gradually narrows to a point. The town of *Sydney* is built at the head of the cove, on a rivulet which falls into it, and in a valley between two opposite ridges. The streets are long, wide, and English in their appearance. The best houses are of white freestone or brick plastered, many of them being surrounded with gardens. The views from the higher parts of the town are bold and picturesque. Ships come up close to the wharfs and stores at Sydney. The population of the place is rapidly increasing; the latest estimate was about 20,000. In Sydney are to be found public seminaries, markets, banks, extensive warehouses, hotels, distilleries, breweries, stage-coaches for different parts of the colony, five newspapers, besides the Government Gazette, also a Monthly Magazine, and one or two Almanacs. *Paramatta*, formerly called Rose-hill, is the town next in importance in New South Wales to Sydney. It is situated at the head of the harbour of Port Jackson, distant from Sydney eighteen miles by water and fifteen by land. It lies on either side of a small river, called by the natives Paramatta, which falls into the harbour, and contains about 3000 inhabitants, principally traders, artificers, and labourers, who find employment in the surrounding country seats and farms. Its main street is about one mile long, and extends from the country residence of the governor to the wharf, whence the view down the river is extremely interesting. Several public buildings are in the town and neighbourhood. Stage coaches and steam boats pass daily to and from Sydney. *Windsor*, the third town, is built upon a hill close by the river Hawkesbury, which at this point is 140 miles distant from the sea, and navigable for vessels of a hundred tons burden four miles above Windsor. It is twenty miles from Paramatta, and thirty-five from Sydney; its population is estimated at about a 1000. The lands about Windsor are fertile, but are very liable to be inundated by the Hawkesbury, which has been known to rise seventy, eighty and even ninety feet above its ordinary level. Next to Windsor in importance is Liverpool, at the distance of nineteen miles from Sydney, in a southwest direction. It is situated on the banks of George's river, which discharges itself into Botany Bay, and contains about 1000 inhabitants. The name *Botany Bay* was so long applied to New South Wales, that many believe the colony to be founded on that extensive inlet of the sea. Such was the original intention, but on being fully explored, it was deemed disadvantageous for the establishment of a colony, and Port Jackson was preferred. Botany Bay (so called by Sir Joseph Banks, from the number of new plants he discovered there) is about fourteen miles to the southward of the Heads, as the entrance of Port Jackson is called. It is wide, open, and unsheltered for vessels, and the shores around wild, bleak, and barren. A brass plate on the cliffs marks the spot where Captain Cook and Sir Joseph Banks landed. Near it is erected a monument to the memory of the unfortunate La Perouse, who spent a month here, refitting, before he finally sailed on the expedition from which he never returned. George river is about half the size of the Hawkesbury, and is navigable for vessels of fifty tons burden up to Liverpool. After Liverpool the chief towns in New South Wales are Campbeltown, twelve miles distant from Liverpool, Richmond, thirty-six miles distant from Sydney, Newcastle, and Maitland. "The last of these," says Dr Lang, "will doubtless ere long he the second in the colony, as it is situated at the head of the navigation of Hunter's River, and in the centre of the most extensive agricultural and grazing district in the territory. There are other towns, however, in the progress of formation in other parts of the colony, which in a few years will doubtless become places of considerable importance; as at Bathurst, beyond the Blue Mountains; at Goulburn and Bong Bong, in the district of Argyle; at Patrick's Plains, on Hunter's

River; and at Wollongong, in the district of Illawarra. Three or four stage-coaches and two steamboats ply daily between Sydney and Paramatta, and there are also two daily coaches between Sydney and Liverpool—a rising town about twenty miles distant from the capital, forming a thoroughfare for the extensive country to the southwestward. Respectable persons travelling to and from the more distant settlements in the interior, generally travel on horseback, or in vehicles of their own; and goods and produce are conveyed to and from Sydney on large drays drawn by oxen. Between Sydney and Maitland there are three steamboats—the Sophia Jane, the Ceres, and the Tamar—that ply twice a-week each with goods and passengers; seventy miles of their course, or the distance between the Heads of Port Jackson and the entrance of Hunter's River, being along the land in the open Pacific Ocean. All the vessels, it is generally understood, have done exceedingly well. As a proof of this, there has been a company formed lately, the object of which is to place a vessel of much larger size on the course between Sydney and Hobart Town, Van Dieman's Land, to carry cattle as well as goods and passengers.'

*Camden county* lies to the southward of Cumberland. It contains 2200 square miles, and embraces within its limits the fertile region of Illawara, a tract comprising 150,000 acres, entirely shut out from inland communication by precipitous mountains. It also embraces the cow-pastures, an area of 60,000 acres, so called from large herds of cattle being recently found there, all descended from one bull and two cows which had escaped soon after the founding of the colony.

*Argyle county* is to the westward of Camden. It is about sixty miles long and thirty broad. It is thinly wooded, and the territory is crossed by large tracts called *brushes*, which are altogether unproductive. Lake Bathurst is in this county, 129 miles S. of Sydney.

*Westmoreland county* lies to the north of Argyle, and embraces part of the Blue Mountains. It is about sixty miles in length, and forty in breadth.

*Cook's county* is to the left of Cumberland. Its length is fifty-six miles; its breadth, fifty. A great part of it is occupied by the range of the Blue Mountains, across which the fine road from Sydney to Bathurst lies. A large portion is tableland, from 2000 to 3000 feet high, abounding in picturesque scenery. Emu plains and several fertile valleys compensate in some measure for the prevailing rocky soil in this county.

*Bathurst county* is to the west of Cook's county. Its extreme length is seventy-two miles; its breadth sixty-eight. It consists in general of broken table-land, in some places forming extensive downs without a tree, such as Bathurst plains, which include 50,000 acres. Although hut of recent discovery, being considered inaccessible until 1813, it is one of the most flourishing districts in the colony, the climate being healthy, and the pasturage excellent for fine woolled sheep. The town of Bathurst, which is thriving, is, by the road, 121 miles distant from Sydney.

*Roxburgh county* is to the north of Bathurst. It is fifty-three miles in length, and forty-three in breadth. The surface is hilly and broken, but it contains, notwithstanding, some good pasturage.

*Wellington county* (seventy miles long, by fifty-one broad) is to the north-west of Roxburgh, and of a similar character.

*Philip county* (sixty-two miles long, thirty-eight broad) lies to the east of Wellington. It is thinly peopled, and little is known of its topography.

Of *Bligh and Brisbane counties*, lying in the north-west, near the Liverpool range of mountains, little also is known.

*Hunter county* (length seventy-one miles, breadth forty-seven) lies near the east coast adjoining Northumberland county, which intervenes between it and the sea.

*Northumberland county* (length sixty-one miles, breadth fifty) is one of the finest in the colony. Its general aspect is a series of undulations and elevated plains, intersected by numerous creeks, streams, and rivulets. The fine river, Hunter, affords a water communication throughout its northern boundary, and along its alluvial banks some of the most interesting farms in the colony are situated. Newcastle, the maritime town of the county, is fast rising into eminence; as is also the town of Maitland, on the Hunter, distant from Newcastle twenty-five miles. Coal is wrought at the latter town, so that the name is no misnomer.

*Gloucester county* possesses the fine harbour and rising town of Port Stephens, and is well watered. Its length is seventy-four miles, its breadth sixty-nine; and it comprises the Australian Agricultural Company's grant of a million acres.

*Durham county* is west of Gloucester, and partakes of the same character. Its length is sixty, and its breadth fifty miles.

The remaining counties—*Georgiana county*, *King's county*, *Murray county*, and *St Vincent county*—are situated to the south of Bathurst, and are yet but imperfectly explored. They approach the vicinity of Australia Felix, recently discovered and described by Major Mitchell.

Australia forms a contrast to other great territorial portions of the globe, in the comparative scarcity of large navigable *rivers*. A deficiency of fresh water seems, indeed, to be the great drawback to the occupancy and prosperity of many of its districts. New South Wales is better supplied in this respect than any of the other settlements. The Hawkeshury, with its tributaries, the Grose and the Nepean, is most valuable to the colony, but forms only a stream of secondary magnitude. In the interior, beyond the Blue Mountains, have been traced the Lachlan and the Macquarrie, running respectively courses of upwards of 200 and 300 miles. On the east coast also, are the rivers Williams, Paterson, and Hunter, forming Port Hunter; the Hastings, forming the fine port of Macquarrie, about 220 miles N. E. of Port Jackson; and the still larger stream of the Brisbane, falling into Moreton Bay. The Morrumbidgee river has its origin in the western ridge of the dividing range of mountains in Murray county, about 200 miles S. W. of Sydney. It pursues a tortuous course for upwards of 300 miles, and expands itself in the Lachlan. The combined rivers traverse a great extent of fine country, until they join the Murray, which forms the largest river yet discovered in Australia, and falls into Lake Alexandrina at Encounter Bay, on the south coast. Of the Murray and the Darling we shall have occasion to speak when we come to the section *South Australia*.

The *climate* of New South Wales, and indeed of the whole island, so far as experience goes, has been found to be salubrious, and extremely favourable to European constitutions. Occupying a position considerably nearer to the south of the equa-

tor than Britain is to the north, the climate is warmer in summer and milder in winter than with us. All authorities agree in the great uniformity of the temperature throughout almost its whole extent. It does not vary to a high degree even at different seasons of the year, nor is it liable to sudden transitions from heat to cold. The average temperature of Spring is 65·5., of Summer 72, of Autumn 66, and of Winter 55. In Sydney, the thermometer is rarely below forty. As regards climate, every thing in Australia is the reverse of what it is in Britain. There the north is the hot wind; the south, the cool; the westerly, the most unhealthy, and the easterly the most salubrious. It is summer with the colonists when it is winter at home, and the barometer is considered to rise before bad weather, and to fall before good. The following summary of the weather in New South Wales, during the year, is extracted from a Sydney newspaper.

"*January.* Generally the hottest month of the year. Wheat harvest ends. The locust's song gets weaker, and insects of the finer tribes begin to die off. Fruit plentiful: water melons in abundance. The orange-tree in blossom. Thunderstorms frequent, accompanied by showers of rain. Average temperature seventy-three degrees.

"*February.* Heavy close weather may be looked for in this month. Thunder-showers now and then. Last of the hot north-west winds, commonly the most intense. Stone-fruits begin to get scarce. The grape, pear, fig, and apple, in their prime. Mosquitoes congregate in clouds, and prove singularly troublesome to the lieges. Average temperature seventy-four degrees.

"*March.* Rains may now be expected. The vegetable world begins to recover from the parching effects of the summer sun, and plants of European growth or parentage lift their drooping heads. The equinoctial gales blow fiercely as in all other parts of the world. Average temperature seventy degrees.

"*April.* Heavy rains during this month, and the weather broken and uncertain. News of 'accidents by field and flood,' from the Hunter and Hawkesbury Rivers. Sydney a quagmire, and mudboots a necessary appendage. Australian fruits vanish, and apples make their appearance from Van Dieman's Land. Monsieur Mosquito tenders his farewell card, leaving only a few skirmishers to look after the fresh arrivals. Average temperature sixty-five degrees.

"*May.* The finest month of the year, and the most congenial to the European constitution. Weather clear, cool, and bracing. The sun sets and rises in a cloudless sky for weeks together. Heavy mist at times, succeeded by tolerably mild days. Average temperature fifty-eight degrees.

"*June.* Wheat-sowing finished in all the districts. Oranges brought to market, and continue in season for six months. Vegetables of all kinds in the greatest abundance, and of the finest quality. General character same as last month. The maize harvest ends. Average temperature fifty-three degrees.

"*July.* Generally clear and cool like the two preceding months. Ice may be seen a few miles out of town; and thirty or forty miles inland, the thermometer falls to thirty and thirty-two degrees. In and about Sydney it is rarely seen under forty degrees. Average temperature fifty-two degrees.

"*August.* Broken weather about this period, with heavy gales of wind. The bull-frog all alive in the ponds and marshes—'Croak, croak, croak.' Heavy rains from the S. S. E. and S. W. The peach-tree puts forth its delicate blossom about the middle of the month, clothing the gardens and orchards with beauty. Average temperature fifty-five degrees.

"*September.* The vernal equinox; fresh, hard, and heavy gales. The orchards present a beautiful appearance this month, the peach-tree forming the principal feature in the picture. Towards the latter end of the month, the thermometer begins to rise, and the mornings are pleasantly warm. Average temperature fifty-nine degrees.

"*October.* Planting of maize, or Indian corn, commences. Two hours after sunrise, that is, from six till eight o'clock, the finest part of the day. Monsieur Mosquito makes his first appearance on *any* skin. Average temperature sixty-four degrees.

"*November.* The hot weather sets in. Dust ankle deep, and fine as tooth-powder, possessing peculiarly searching qualities. 'The bush' teems with flying, creeping, and crawling things. Wheat harvest commences in the northern districts, and sheep-shearing is begun throughout the colony. Average temperature seventy degrees.

"*December.* Hot winds now and then, generally followed by a southerly wind and a cloudy sky. Thunder, lightning, and rain, at intervals. The locusts in full voice, and congregating on the oaks and gum-trees in myriads. The Christmas dinner is eaten with open doors and windows, and the thermometer standing at eighty-five degrees of Fahrenheit in the shade. Average temperature seventy-four degrees."

The excellence of the climate of New South Wales may be inferred from the variety of its vegetable productions. All the finer kinds of fruits are produced there in abundance, as apples, pears, plums, strawberries, cherries, mulberries, apricots, peaches, nectarines, figs, grapes, oranges, lemons, pomegranates, &c. Green peas are gathered twice a year. Brandy is distilled from the peaches, but a want of proper management has hitherto prevented the successful manufacture of wine from the grapes. Indian corn and wheat are the two chief kinds of grain raised in the colony. Wheat on good soils averages from twenty to thirty bushels in the acre; maize from forty to fifty bushels. Oats and barley have as yet been chiefly cultivated for fodder. Tobacco of good quality is grown.

In Australia, the prevailing rock is sandstone, so that the soil is in many places dry and loose; and as the trees are all evergreens, the ground is not annually enriched by the succession of vegetable matter, caused by the fall of the leaves, as is the case in the fields of Europe and America. The rich lands of Australia consist chiefly of the alluvial soils on the margins of the rivers; and hence the country near the Hawkesbury and Hunter rivers is considered the granary of the colony. The liability, however, of the rivers to inundations, must be taken into consideration in estimating the elegibility of a settlement. During a rainy season vast torrents of water are poured into the rivers, which soon overflow their bounds, and on reaching the more level country, the water, no longer propelled by its gravity, accumulates to an immense extent, and produces a great destruction of property. The Hawkesbury, as we have already stated, has been known to rise ninety feet above its ordinary level.

The droughts, which occur at irregular intervals, and sometimes continue for two years in succession, are a still more serious evil to which New South Wales is exposed; and if famine is not to be anticipated, from the abundance of animal food, and the facility with which supplies can be obtained from Van Dieman's Land, Java, and Bengal, still they must occasion much inconvenience and serious fluctuations in the grain market.

The *geology and mineralogy* of New Holland are yet but imperfectly known. It may be stated generally, that Australia is of *diluvian*, as contradistinguished from what geologists understand by *volcanic* origin; but whether the land has been left dry by the receding of the mighty deep, or whether, as in Chili or other parts of America, some powerful submarine action has raised the earth above the ocean level, either by one shock, or by a series of successive shocks, must, in our present ignorance, be a matter of mere conjecture. Like other parts of the globe, Australia appears to have experienced the effect of an universal deluge, previous to which it was tenanted by a different and more numerous class of animals than are now found on its surface; and it also appears that the receding waters of the great ocean, in their progress to the South Pole, had rested for a longer period on New Holland than on the northern hemisphere. In many parts of the coast, extensive beds of marine shells of the same kinds as those at present living in the adjacent seas, are found, and in the interior caverns have been discovered containing the bones of extinct races of animals, thus refuting the notion that New Holland is comparatively of recent origin. Extensive masses of granite occur on the eastern coast of the island; trap porphyry and serpentine have also been discovered in several places. Immense beds of sandstone are to be found in the vicinity of Sydney, and this rock appears to constitute the greater part of the Blue Mountains. Limestone is abundant, and in some districts it passes into marble. But by far the most valuable mineral yet found in Australia is coal, of which a considerable quantity is wrought at Newcastle, and indications of it have been traced in many other parts of the country. The district, indeed, to the south of Hunter's river is an extensive coal-field, the cliffs on the sea-shore presenting an interesting section of this stratum. The seams of coal are distinctly visible on the abrupt face of the cliffs, forming the south headland of the harbour of Newcastle, and may be traced for nine miles, when they abruptly terminate, by suddenly bending downwards, and sinking below the level of the sea. From this place, a low sandy beach and low-land extend to the entrance of Lake Macquarie, the south head of which rises into high cliffs, in which the coal strata again present themselves. The coal is of vegetable origin, the foliage and fibres of the plants being often quite distinct. In the alternating strata of the coal are found nodules of clay and ironstone. Beds of coal and iron are also met along the banks of the Paramatta and other rivers; and in the vicinity of the mountains from which many of them flow, these minerals also abound, communicating a ferruginous taste to the smaller streams, and indicating the stores which are yet to be explored. Copper and other metals have also been found, but as yet coal is the only mineral which has been worked, although the day is probably not far distant, when iron will form a staple product of Australia. Rock-crystals, garnets, and agates have been found, but none of the more precious gems.

In its *animal and vegetable productions*, Australia is very peculiar. There is a total absence of all the larger quadrupeds, such as elephants, lions, tigers, bears, deer, &c. The largest four-footed animals yet discovered in the island are the kangaroos, of which there are many varieties, from the "kangaroo rat" to the "forester," which stands from four to five feet high. There are more than forty species of the Marsupial or pouched family in New Holland, of which scarcely any congeners occur elsewhere. Two-thirds of the Australian quadrupeds make their way by springing in the air. All the kangaroos, when using any degree of speed in their movements, proceed by prodigious leaps, sometimes exceeding twenty paces, and this can be kept up for some time, so as to outstrip the fleetest greyhound. The kangaroos are purely herbivorous, grazing like deer or cattle, and are mild and docile, except in self-defence. Their flesh is much esteemed; but they are fast disappearing before the settlers, or, as the natives say, "where white man sit down, kangaroo go away." The Opossum tribe are very numerous, and somewhat similar to those found in America. The native dog is somewhat like the Indian jackall, with a head like a fox, and erect ears, the colour being generally a reddish brown. It is very destructive to sheep and poultry, and is therefore destroyed without mercy by the settlers. The wombat, a kind of bear or badger, the porcupine ant-eater, and also a species of sloth, are to be found in New Holland. But the most singular animal of New South Wales, indeed the most extraordinary in the world, is the *ornithoryncus*, or *duck-bill*, called by the inhabitants the *water-mole*, which is chiefly found near Port Jackson. It combines the characteristics of a bird and a quadruped. It lays eggs like the one, yet suckles its young like the other! It presents the perfect bill of a duck, engrafted, as it were, upon the body of an otter or mole-like animal. Its size is equal to that of a full-grown cat, but its short feet and tail give it the appearance of being smaller. It swims well, and indeed seldom quits the water, as it crawls with difficulty on land. The foot of the male is armed with a spur like a cock's, through which passes a poisonous liquor, rendering the animal dangerous. The birds of New Holland are numerous and in great variety. The emu or cassowary, a species of ostrich, is one of the most singular, but it is fast disappearing. The most common birds belong to the Melliphagous or honey-sucking family. Many of the warblers are uncommonly beautiful; the two most magnificent are the rifle bird, and the ring oriole. The pigeons, for variety and beauty of plumage, are unequalled in any part of the world, as are also the parrots, parrakeets, and cockatoos. The spotted grosbeak is a splendid bird, as is also the lyre-tail. This gigantic crane is a stately bird, and is seen frequently on the borders of rivers or lakes, where also the black swan is found. Eagles, hawks, bustards, plovers, pheasants, snipes, &c., are common. The aquatic tribes are nearly similar to those found in other countries. Insects are numerous, and approximate more to those of Africa and Asia, than America. Locusts are common in some parts of the colony. Of bees, there are three kinds, all without stings. English bees, which have been recently introduced, multiply fast. Ants are of several varieties: the largest are nearly

an inch in length. Flies and mosquitoes are often a great nuisance, but the latter are disappearing from the cultivated parts of the colony. Spiders are very large, and in some seasons caterpillars are so numerous as to blight the finest crops. Reptiles are fortunately not numerous. There are several varieties of snakes, a few of which are poisonous. Scorpions, centipedes, and tarantulas are found, but not to such an extent as to occasion any considerable inconvenience or discomfort to the settler. Lizards and frogs are numerous. The deaf adder is poisonous. It swells out in the middle, with a flat head, and a cleft tail, which latter opens and shuts like a pair of forceps. When teazed, it seizes a stick as tenaciously as a cur dog. Cod and perch (as they are called) are found in great quantities in the fresh water rivers, and many varieties of other fish are found along the coast. Whales and seals frequent the coves. Oysters are extremely plentiful, and, though generally small, are of a delicate flavour. The shells of the Southern ocean yield only, in attraction, to those of the Indian sea.*

The vegetable productions of Australia are, like the animals, in many cases, very different in structure and appearance from those found in other countries Acacias are extremely common, and upwards of a hundred different kinds have been found, all of them possessing a family resemblance which distinguishes them from the Acacias of the old and new world. The Proteas and Banksias are almost peculiar to New Holland; the Eucalyptus Casuarna, and the Norfolk island pine, are remarkable for their beauty, and afford valuable timber. The bark of several trees abound in tanning matter, and large quantities have been sent to Britain as a substitute for oak bark. Several of the Acacias afford a product possessing the properties of gum arabic, which is obtained from an African species of the same tribe of plants. A species of Eucalyptus produces manna. Many of the trees of New Holland attain to a great size: thus the Norfolk island pine reaches the height of 150 feet, and trees, whose diameter amounted to 15 or 20 feet, have been found in different parts of the country.

Great as the resources of New South Wales are, as an agricultural, fishing, and mining colony, it is on the rearing of sheep, and the production of wool, that it at present mainly depends for its prosperity. No country in the world presents such an illimitable extent of pasture land, or possesses a more admirable climate for grazing, which, from its dryness and mildness, improves the wool, and permits the sheep to find sufficient food without shelter during the whole year. America, as is well known, is not a sheep-feeding or wool-growing country. In Canada and other northern parts, sheep require to be housed, and fed by artificial means, for several long winter months; while on the fine prairies of the States, the sheep which are left at large throughout the year do not yield wool of a valuable quality. New South Wales, on the other hand, resembles Spain in its qualities for pasturage in all seasons, and its climate produces equally fine, if not superior wool. At the present moment, New South Wales wool enjoys the highest reputation in England and America—it takes the lead in the market—and so readily and so profitably is it disposed of, that the cost of transport of sixteen thousand miles goes almost for nothing in the grower's calculation of profits. Most of those beautiful and soft woollen fabrics which go by the names of Indianas, Merinos, and Schallis, and are in such large request by ladies in the shops of our haberdashers, are chiefly manufactured from this fine New South Wales wool; and it is obvious, from the growing taste and demand for these articles, which are so well suited to our climate, that (barring fiscal interference) the production and sale of this species of wool must soon become one of the first trades connected with British commerce. The introduction of this important branch of industry is due to the talents and exertions of the late John Macarthur, Esq., one of the earliest free settlers in the colony. As early as 1793, this gentleman obtained several Merino sheep from the Cape of Good Hope, with which he improved his Bengal flock; and subsequently, in 1803, he visited England, and laid his schemes before the privy council, who merely approved of them, and he accomplished the rest by his own enterprize. The efforts of Mr Macarthur were completely successful, and the rapid increase in the quantity of wool, annually exported from Australia, proves this branch of industry to be capable of indefinite extension. "During the ten years (says Dr Lang) that had elapsed from the first muster after governor's Macquarie's arrival in the year 1810, to the annual muster in 1820, the sheep of the colony had increased from 25,888, to 99,428; Mr Macarthur's flock being at the latter period 6800, of which 300 were pure Merinos. During the administrations of Sir Thomas Brisbane and General Darling, it became a matter of controversy in the colony, whether the Merino or the Saxon breed, of which a few sheep had been introduced into Van Dieman's Land, direct from Germany, in the early part of the year 1823, produced the finest wool, and was most profitable for the sheep farmer. The preference, however, is now generally given to the Saxon breed, which, it is well known to persons acquainted with sheep-farming, was itself originally of Merino extraction. Several cargoes of Saxon sheep have at different times been imported into the colony by different colonial proprietors, as well as on speculation; and sheep of that breed are now very widely diffused over the territory, the colonial flocks of inferior breed having from time to time been gradually improved by crossing with the

* The following account of the sporting, &c., at Bathurst, in New South Wales, is given by a recent traveller:—"Bream is caught in all the rivers, bites very fast, and is nearly as large as the salt-water fish of the same name caught on the coast. The cod is the most remarkable fish at Bathurst, and is not unfrequently caught as heavy as fifty, sixty, and even ninety pounds; when caught in large quantities, they are generally dried, and may be seen in this state hanging up inside the roofs of the settler's houses. Game is plentiful; ducks, snipes, widgeon, teal, abounding near the rivers. I saw eight black ducks brought down at one shot, weighing, as I guessed, four pounds each. These are delicious eating. Sometimes the settlers will throw up a breast-work of boughs, near some favourite rendezvous of the birds, close to the water, and when they have collected near the spot, the sportman fires from behind his battery, and does dreadful mischief among them, forty ducks having been brought down in this manner at one fire. The plover and bronze-winged pigeon are very numerous, and easily shot; the latter, especially, is a beautiful creature, and twice the size of the domestic pigeon, looks well, and eats well at table. But the best sport at Bathurst is the quail. This is the partridge shooting of New South Wales generally; but the Bathurst settlers seem to enjoy it in perfection, having a much greater scope of clear open country. The cockatoo and magpie also abound at Bathurst, and are a great nuisance to the cultivated fields. In the forest country a variety of parrots, of the most beautiful plumage, fly about in every direction. This abundance of the feathered tribe was the more remarkable, as, in a late journey to Hunter's River, very few birds of any kind were seen. There is a hunt at Bathurst for the purpose of enjoying the sport after the kangaroo, and exterminating the native dog."

Saxon. The wool undergoes the usual process of washing on the animal's back in a running stream before it is shorn: it is then dried, shorn, and sorted; after which it is packed into bales, and forwarded on large drays drawn by oxen to Sydney, to be there shipped for London. The freight to London usually costs only from a penny to three-halfpence per lb., the price in England varying from 1s. 6d. to 2s. 6d. per lb. Mr Macarthur's wool for the year 1833 averaged 3s. 6d. per lb., the general average for that year being from 1s. 11d. to 2s. 9d. The paramount importance of this branch of colonial produce will appear from the return of the quantity of wool exported from New South Wales for each successive year, from 1819 to 1835, inclusive; the quantity exported in the first of these years being only 71,299 lbs., while the exportation for 1835 amounted to 3,776,191 lbs., and the amount of this principal article of colonial export having more than doubled itself during the last few years. Sheep in New South Wales generally double their number every four years—in many instances in less than half that period; and as there is an unlimited extent of pasture to the northward, as well as to the southward and westward, the quantity of wool that will be exported from the colony in a few years hence, will be great beyond belief in England. An intelligent merchant in Sydney has calculated that the export of this principal article of colonial produce will, in all likelihood, realise half a million sterling in the year 1840. The quantity of British produce of every description, which this large income from a single article of colonial produce will enable the colonists to purchase, and the stimulus it will afford to commercial industry and enterprize both at home and abroad, are considerations of the highest importance to every British statesman."

The business of a sheep-farmer or wool-grower in New South Wales is much less toilsome and precarious than a similar profession in this country. Here the rent of land is enormous; the diseases of the sheep numerous and often fatal; and the toil of preserving the animals from starvation or from destruction by snow in winter, considerable. In New South Wales, extensive tracts of land may be cheaply rented or purchased for a comparatively small sum; and if a careful shepherd or overseer remain beside the animals to keep them from straying, they require neither doctoring nor artificial feeding—the whole process goes on naturally under the blessed canopy of heaven, and after getting over the initiatory difficulties, the proprietor has little else to do than pocket the profits of his speculation. It is perfectly clear, from every published statement, that sheep-farming in New South Wales is every way more agreeable and profitable than that of raising crops from the soil; and as this is well known, capital will take that direction in spite of all representations to the contrary. It should, nevertheless, be understood, that, to those persons who prefer agricultural to pastoral pursuits, or who may not have so much as £300 and upwards to adventure on a stock of sheep, the country in every direction presents facilities for settling on small arable farms, which may be purchased or rented either in a natural state, or partially cleared and cultivated. The practice of granting lands free to settlers is now abolished by government, and all crown lands are sold by auction, at whatever they will bring above the upset price of five shillings per acre.

The general import and export trade of New South Wales has been for some years rapidly increasing. In 1825, the total value of imports was £300,000, and in the year 1833 it had increased to £713,972. In 1825, the total value of exports (consisting of wood, hides, horns, cattle, horses, wool, provisions, &c.,) was £78,908, and in 1833 it had increased to £394,801. The shipping belonging to the colony is likewise increasing; and already Sydney owns about a hundred vessels, forty of which are engaged in the whale fishery.

The proximity of New South Wales to the most eligible southern whale fishing stations enables the settlers to perform three voyages while the whalers from Britain and America perform two. While the former reach the grounds in fifty days, the latter are frequently seven months in performing the passage. The freight of the oil from New South Wales to England is estimated at only a tenth of the amount they can realize by being employed in the fishery, during the time they would consume in going to and returning from England themselves. The Australians, therefore, anticipate a monopoly of the South Sea whale fishing.

The progressive prosperity of New South Wales may be traced in the rapid increase of its *revenue*. In 1813, the total revenue of the colony was £12,642; in 1817, £22,158; in 1822, £44,768; in 1826, £72,220; in 1830, £104,729; in 1834, £205,535, and in 1836, £330,285.

The colony, when established at Sydney cove, on the 26th Jan., 1788, consisted of only 1030 individuals, of whom upwards of 700 were convicts. Since that time four censuses have been taken, which give these results: 1810, 8293; 1821, 29,783; 1828, 36,598; 1833, 71,070, the number of males being to that of females about three to one. The total number of white inhabitants in the colony is now estimated at upwards of 100,000, of whom about 25,000 are convicts, the residue of upwards of 90,000 who have been transported to the settlement since its formation in 1788. The three great divisions of the white population are, 1st, Those who have arrived in the colony free, and their descendants; 2d, Those who are free by servitude, or by pardon, and their descendants; and, 3d, Those who are still in bondage. The first are called *sterling;* the second, *emancipists;* and the third, *government-men.* Those born in the colony from the white population are called *currency.* The free emigrants in general refuse to hold social intercourse with the emancipists. This treatment is borne indignantly by the emancipist, who has been admitted to a complete footing of political equality, with the exception of not being summoned upon juries at quarter sessions. The distinctions and divisions which exist in the society of New South Wales are necessary results of the convict system, and much to be deplored. Many of the emancipated convicts and their descendants are now men of considerable wealth and influence. "Our emancipist body, in honest truth (says Cunningham), forms the most useful and enterprising portion of our community—all the distilleries, nearly all the breweries, and the greater portion of the mills and various manufactories, being owned by them; while they have never, so far as I can learn, disgraced themselves by engaging in any of the smuggling transactions, whereby many of those who came out under the proud title of *free men* have tarnished their reputation. Several of our most respectable merchants have told me, that in

the numerous matters of business wherein they have been concerned with the emancipists, their conduct has always been most honourable."

When convicts arrive in the colony, they are consigned to barracks for their reception, and are ready for disposal as servants to the settlers in all parts of the country. When disposed of to the settler, the convict is provided by him with the means of erecting a hut for himself, if no such accommodation exists at the settler's station. The convict receives no wages, but is provided with certain daily rations of food, clothing, bedding, and culinary utensils. The hours during which he is required to work are from six in the morning until six at night, with the allowance of an hour for breakfast and another for dinner. When a convict conducts himself with propriety for a certain length of time, and which is proportioned to the term of his sentence, he is entitled to claim from the colonial government what is called a ticket of leave, a sort of warrant or licence, which enables him to live where he pleases, and to employ himself in any legal way he may choose. This, of course, is recalled if he commits any new offence; and many advertisements are from time to time to be seen in the Sydney newspapers, intimating such recall, and naming the individuals. Though, while he conducts himself with propriety, the convict's peculiar condition in society is not obtruded upon him by any peculiar treatment, yet the slightest departure from this brings him immediately within the reach of the colonial laws. If refractory, or even merely insolent to the settler, his master, he may be taken before a magistrate, and either flogged, or sentenced to work for a certain period on a short allowance of food, in what are called the government chain-gangs, composed of convicts who have offended a second time, and are, as a punishment, worked in fetters. On the expiry of his original term of banishment, the convict becomes an emancipist, and is then his own master. From an interesting parliamentary paper, it appears that the average expense of transporting a convict to New South Wales, which was in 1827, £24. 1s. 6d., is now considerably under £20; and that the average expense of actually maintaining and clothing a male convict there in 1821, was £22. 9s. 8d., but that now it does not exceed £7. 3d.

In order to ameliorate the evils inseparable from the penal system, the colonial government has lately adopted means for procuring the settlement of free and respectable labourers, including all classes of mechanics, with their families. The revenue derived annually from the sale of crown lands is devoted to this object. At certain ports in the united kingdom, government emigration agents are settled, and to these gentlemen the whole business of collecting and sending off emigrants is entrusted.

The number of *aboriginal inhabitants* in the colony of New South Wales has been estimated at 5000. They possess the thick prominent lips, sunken eyes, high cheek bones, and calveless legs of the African, differing however, in the hair, which, except in Van Dieman's Land, and the adjacent equally cold coast of Australia, is long and coarse. The nose, though large, is not so flat as that of the African, and the forehead is high, narrow, and pointed. The features of the women are not altogether unpleasant, which, added to an easiness of manner and a harmonious voice (especially in the pronunciation of English) render many of them favourites with the white men. Nothing can equal the brutality of these tribes in their treatment of the weaker sex. In order to obtain a woman in marriage, a man lies in wait for her in some place of retreat, knocks her down with a bludgeon or wooden sword; and, while she is yet besmeared with blood, takes her to his own home, where the nuptial ceremony is completed in a manner too shocking to be described. Polygamy is very generally practised. Both sexes go naked, and have no feelings of shame. In general, it may be said that the whole of the aborigines of Australia are of the same stock. Yet their language differs so much, that tribes within short distances of each other have each their own peculiar dialect. In the interior their number seems to be diminishing from famine, war, and the cruelty and encroachments of white settlers; at Sydney and other towns, where they exist chiefly by begging, vice and disease are fast destroying them. The ill-usage which they receive from the colonists in the back settlements, who, besides depriving them of their fishing stations and their kangaroo grounds, often shoot them relentlessly, like so many wild animals, is a disgrace to the colour and the creed of the whites; it displays a soul blacker than the skin of the poor negro—a creed more cruel than the most savage of his superstitions. So recently as June, 1838, a case occurred in New South Wales, in which eleven convicts, some of them emancipated, destroyed, and afterwards burned the bodies of no fewer than twenty-eight native blacks, men, women and children, on no other provocation that could be conceived than a suspicion of some of the natives having stabbed some of the cattle in charge of the convicts. History scarcely furnishes a case equal to this in atrocity; yet when the culprits were brought to trial in November, 1838, such is the prejudice of the colonists against the natives,—in so little estimation is the life of the latter held,—that a jury found, in the teeth of the most satisfactory evidence, the whole of the eleven convicts Not guilty; and it was only on a second trial, on a new indictment, that seven were, with difficulty, pronounced guilty, and executed. The heart sickens at the thought of such circumstances; and eyes, which would otherwise rest with pleasure on the bright picture of prosperity which the colony presents, turn with sorrow from its contemplation, when they see it thus shadowed with crime and stained with blood.

*South Australia.* South Australia is a large district of the island, situated on the south coast, extending from 132° to 141° E. longitude, and from 38° to 26° S. latitude, and containing nearly two hundred millions of acres. It lies between the Swan river and New South Wales, and may be easily recognised on the map of Australia, by being penetrated from the sea by Spencer's Gulf, and Gulf St Vincent, at the entrance to which lies Kangaroo Island.* It is distant from Britain 12,000 miles, namely 6000 miles to the Cape of Good Hope, 3000 from the Cape to the small island of St Paul's, and 3000 from St Paul's to South Australia. This distance may be performed in twelve weeks, but the average length of voyage may be reckoned a hundred days, or fourteen weeks. South Australia possesses a sea-coast of 1500 miles in extent. The principal harbours

* This island is 200 miles in circumference. Except for its fine bay, it is of little value as a settlement, being overrun with brushwood.

throughout it at present known are—Port Lincoln in Spencer's Gulf, Nepean Bay in Kangaroo Island, and Victor Harbour, in Encounter Bay. Port Adelaide is only fitted for small vessels. The harbour of Port Lincoln is one of the finest in the world, and in all probability will eventually be the principal seat of commerce in South Australia; Nepean Bay also affords commodious and extensive anchorage, but from its situation on Kangaroo Island, it can never rise to much consequence, as that island is totally destitute of fresh water, and so overrun with brushwood as to form a most serious obstacle to its cultivation; while Victor Harbour, though much inferior to Nepean Bay in point of accommodation and security, is likely to rise into importance from the extensive, fertile, and well-watered country by which it is surrounded.

The coast of South Australia was first explored in 1802, by Captain Matthew Flinders, with the assistance of Mr Westall, the artist, in H. M. S. Investigator. The captain in his researches underwent many dangers and privations, for his ship was badly fitted out, the men were labouring under scurvy, and he lost the master of the vessel, Mr Thistle, and boat's crew, in crossing over Thorney passage to Thistle Island.* In Encounter Bay, he met with an expedition under Captains Baudin and Freycinet, in the French corvette Geographe, sent out by Napoleon's government to survey the coast, and thus he anticipated them in the discovery of Spencer's and St Vincent's gulfs by a few days only. In 1815, Captain Dillon visited this part of the coast; in 1819, Captain Sutherland spent seven months at Kangaroo island, on a sealing expedition; in 1827 and 1828, Captain Goold made two sealing voyages to this coast; and still later Captain Sturt surveyed a considerable part of the country. The different accounts of these gentlemen tended to awaken an interest in the public mind regarding a splendid territory which had hitherto been all but unknown.

Every account agrees as to the salubrity of the climate, and general fertility of the soil, of South Australia. In these respects it is considered superior to New South Wales. But in the essential requisite of fresh water it is more deficient than the latter colony, scantily supplied as that is; and unless some artificial means are adopted for obtaining or collecting a sufficient supply for all seasons, it is evident the colony can never prosper to any large extent. On this subject, Mr T. Horton James, in his "Six Months in Australia," has spoken out manfully; and we have more reliance on his account than on the descriptions of emigration committees and land commissioners, which too much resemble in style, and we fear also in veracity, the sublime advertisements of London auctioneers.

"All New Holland," says Mr James, "a continent as large as Europe, may be described as far as it is known, as being cursed with a general want of water—there are scarcely any rivers, and for this reason, that there are hardly any mountains. This is a fatal objection to the interior of this vast territory; for, with the exception of the Coast Ranges, no person has hitherto been able to descry any thing like elevated land in the interior of the country. South Australia has therefore nothing to boast of, any more than the adjoining colonies, on the score of mountains; and I should say that Major's Mitchell's newly-discovered country of Australia Felix and Port Philip, surpasses the commissioners' colony in this one important item. The Mount Lofty range is certainly a very beautiful and conspicuous object, though rather limited, not running more than forty or fifty miles in the direction of the meridian, and its average elevation, except at two or three peaks, does not exceed 1000 or 1500 feet. In breadth it may be about twenty or thirty miles, and contains in its whole extent somewhere about half a million of acres, of a very pretty well watered mountain pasturage, abounding in fine timber for building purposes as well as for fencing, wheelwright's work, &c. and worth two or three shillings per acre.

"The other mountains at present known, are those at the top of Spencer's Gulf, known as Mount Arden and Mount Brown, and those of Hammock Mount and Barn Hill, at the top of St Vincent's Gulf. This is a very meagre catalogue for such an extensive country, and no wonder that South Australia labours under all the usual evils of drought, so peculiar to New Holland in general. Captain Flinders could see no other high land all the way from Fowler's bay, which may be considered the first point of the colony nearest England, until he came to Cape Northumberland, which is the other and most eastern limit of the coast. Of course, as was hinted above, where there are so few mountains there cannot be many rivers, and the Murray is the only river that deserves the name hitherto discovered. This is as broad, for the last 200 miles of its course, as the Thames at London Bridge, and carries its water perfectly sweet and drinkable as far as the lake. Next to the Murray may be reckoned the river 'Glenelg,' discovered by Major Mitchell, at the eastern boundary of the colony, near Cape Nelson, a very useful stream, though dry at the mouth at some seasons of the year, for the most part running through the adjoining colony of Australia Felix, at the back of Portland Bay, and a finer country need hardly be sought for in the whole world than this same country to the north of Portland Bay. The river Rufus of the maps, discovered by Captain Sturt, and so called after the red hair of his friend and companion, Mr George M'Leay, falling into the Murray, in about longitude 141°, is now discovered to be a mere nothing, not exceeding four miles in length, and merely serves for the outlet of the superabundant waters of the pretty Lake Victoria, recently discovered by Messrs Hawdon and Bonney, on their overland journey with cattle from New South Wales. The only other rivers, or rather rivulets, at present known throughout this immense colony, are the little streams called on the maps the Torrens and the Hindmarsh. The first is barely sufficient to supply the handful of settlers at Adelaide with fresh water for their cattle and domestic purposes, and the latter is a small stream which discharges itself into Encounter bay. This paucity of rivers is the worst feature in the picture of South Australia, and must for ever prevent any thing like a dense or even numerous population occupying the interior of the country. In this respect it is inferior to New South Wales, to Port Philip, and to Australia Felix. Even the important river Murray, large as it is, and long as it is, will turn out

* This island is twelve miles in length, and is situated at the entrance to Port Lincoln. It is occupied by the South Australian company as a bay whaling station. It was named after Mr Thistle, who was drowned here. Smaller islands, or islets, near it, are named after the six seamen who perished with him—Grindall's, Hopkins', Smith's, Williams', Taylor's and Lewis's Islands.

not to fulfil the high expectations which the friends of Australia had formed of it after the spirited undertaking of Captain Sturt. Had that excellent man and judicious explorer not been in a boat, and of course considerably below the surface-soil, when he made his memorable voyage down the Murray, he would have ascertained the nature of the adjacent country. He would have found that all the way from Swan Hill, above the junction of the Murrumbidgee, as far down as the mouth of the Darling, the whole country, on both sides, is good for nothing; that with exception of a ribbon of reeds on each bank, varying in breadth from one mile to two miles and a half, and extending down the river between three and four hundred miles, it is one vast, arid, African desert, totally useless for any purposes of colonization. The author visited all the upper branches of this fine river, the Murrumbidgee, the Toomat, the Hume, the Ovens, the Oxley, and the Omio; and as an eye-witness to the general beauty and fertility of the land in their respective districts, had formed, in common with other persons, golden opinions of the lower country, where they all unite and take the name of the Murray but the recent journey of Messrs Hawdon and Bonney, with a herd of nearly 400 head of cattle, from the crossing place at the Omio, to the foot of Mount Lofty, in eleven weeks, has unfortunately set the matter perfectly at rest. If my friend Mr Bonney, who was the pilot on this occasion, with nine persons, had not kept the very edge of the river throughout the whole journey, they must have all perished—men as well as cattle, for want of water and want of grass. The country from the Murrumbidgee to the Darling, did not even boast a solitary tree of any size or magnitude; and the cattle subsisted entirely on the green tops of reeds at the water's edge. This made their journey considerably longer than would appear at first sight to be necessary, but they could not make the slightest detour from the north bank of the stream without being immediately distressed for want of water and grass. This desert country of course comprises many millions of acres—away from the reedy beds on the edge of the river, nothing is seen but a deep subsoil of white pipe clay, beyond which is a solitary and monotonous growth of pine scrubs, pushing their dull and stunted tops over the sandy wilderness, as far as the eye can reach, making of course all travelling in such a country any thing but agreeable. It is sufficiently condemnatory of the river 'Murray' that from the ford of the Omio, which is seventy miles north of the town of Melbourne at Port Philip, our travellers hardly ever saw a tree worthy the name, till they reached the boundaries of South Australia. This long continuance of barrenness and sand made the approach to the new colony particularly pleasant, for there they discovered well-grown stately trees of stringy bark stretching in magnificent profusion all the way up the eastern slopes of the Mount Lofty ranges, and, beneath a rich sward of kangaroo grass for their cattle, giving the travellers great spirits at the end of their journey, and exciting very favourable impressions of the new colony of South Australia for pastoral purposes. Great quantities of gypsum, and some specimens of a nitrate of soda, are seen on the shores of Lake Victoria, and perhaps more of this mineral salt may be discovered in the progress of the settlers. It is in a similar country, the desert of Atacama, that so much is found and brought to England from the various ports of Chili and Peru.

"The climate of South Australia, (continues Mr James) for eight months of the year, is as fine and salubrious as any person can desire or imagine. From April to November it may challenge comparison with the most favoured regions of the globe, and is in every respect suitable and even delicious to an Englishman's tastes and feelings. I have sometimes in the mornings of April and May, whilst inhaling the pure and balmy air of Mount Lofty, felt a positive pleasure in mere animal existence, in the act of breathing. In this month a fire is comfortable at night and morning, and in June, July, and August, it is comfortable all day. In the latter end of March, April, September, and October, the temperature is delightful—neither hot nor cold—you do not perceive whether there is any fire in the room or not, or whether the window is open or shut; but from the latter end of November, all December, January, February, and part of March, the heat is oppressive and almost intolerable. I have seen the thermometer in these uncomfortable months, in a dark room nearly closed up, and with a thick roof of thatch over it, as high as 96°! not once but a dozen different days; and if the instrument is hung upon a wall in the direct beams of the sun, it rises to 140°! This is a degree of heat I never remember to have felt in any part of the tropics even; it dries up every thing: not merely the few running streams that in winter come from the mountains, but all garden vegetation; and so pulverizes the dust in the camp at Adelaide, that it is reduced to an almost impalpable powder, and penetrates every article of clothing, from its extreme fineness; whilst as much caution is requisite in stepping across the road, as if a person were going through the muddiest part of Piccadilly or Whitechapel. Of course the tiny little Torrens all but vanishes before such a sun; in the few places where it runs at all, there would be plenty of room for the whole of it to run through an Irishman's hat; and a far better river is made every day in the London Streets when the parish turn-cock opens a plug. There are, however, several pretty good holes which have too much water in them to be entirely exhausted by the sun's heat, and it was on account of these water holes that the town was placed in this unfortunate situation. The eastern wind, which is the cool and constant wind in summer, blowing through Bass' Straits, over the great lake, and which becomes a strong sea breeze at Port Lincoln and Encounter bay, is never felt, with its refreshing coolness, at Adelaide, because the township is placed close under the West side of Mount Lofty; and it is the absence of this summer or sea breeze which occasions such an excessive heat as now described. In the latitude of 35° such a degree of heat is unknown, and unlooked for, and must entirely be attributed to the inland character of the town. Thus in New South Wales, the town of Parramatta, though only fifteen miles from Sydney, not getting the sea breezes regularly, and being very little elevated above the waters of Port Jackson, is often 20° degrees hotter than it is in Sydney, at the same moment of time. And as misfortunes never come singly, the few wells about the settlement of Adelaide become dry—the scarcer the water the more you want it for washing; and the fine particles of lime-stone dust carried up in numerous whirlwinds about the plains,

fall into one's eyes, and a three months' attack of ophthalmia is the frequent consequence. Half the people you see have got bad eyes, the dandies even wearing veils; but it may be very reasonably doubted whether they do not produce more harm than good. This is the only drawback to the climate, and would never have been experienced had the gallant Colonel had much experience in new colonies, or even had he followed the intentions of the commissioners. The soil of South Australia, as far as the country has been explored, is superior to that of New South Wales and Van Dieman's Land; that is, there does not appear to be so large a proportion of bad soil as compared with good, as so notoriously obtains in the older colonies, where out of twenty acres it may generally be reckoned all over the territory that one acre is good and nineteen bad. It is, generally speaking, far superior in South Australia, and the friends of the surveyor-general have stated, that he chose the situation of the town for the richness of the soil, though it is the first time most likely in the history of colonization that such a reason has been adduced. There is an abundance of good soil all over the Cowandilla plains, stretching from the foot of the mountains to within a mile or two of the Mangrove swamps on the edge of the saltwater creeks. In short there is more good soil than will be required for many years to come; it is generally composed of a rich loam, averaging about nine inches thick, on a substratum of coarse calcareous rock, and through the whole extent of the plains round the settlement gives evidence of having been at no very remote period covered by the sea, every stone you pick up being a part of the rock, and exhibiting a congeries of little shells. Over the hills, the soil and vegetation is still finer, and the author visited a tract of country between the mountains and the mouth of the Murray, that seemed to contain nearly 100,000 acres of excellent rich soil, in many places ready for the plough. At the head of the gulf St Vincent the land gets low and swampy, and at the time of spring tides is overflowed to a great extent, and exhibits a waste of waters. Towards the hills about Cockatoo valley, and the Para river, the soil is again high and dry, of a rich chocolate colour, and capable of growing any thing. Indeed there can be no doubt that South Australia will in time be a very abundant country. If the settlers will economize water, and find some means of keeping it when it falls, and not let it run away, they may in a few years luxuriate in all the good things of this life. Whatever is to be seen of vegetable produce in the markets of Lisbon or Cadiz, Sicily or Algiers, the settlers in the new colony may equally command. It is peculiarly the country of the grape and melon, oranges and lemons, figs, olives, pomegranates, and loquets, and even at its present infant state produces as fine melons as the Levant. The author saw at the governor's table one 18 lb., and another weighing 22 lb.; and handsomer and finer flavoured fruits need not be seen. But the character which stamps the South Australia climate as most valuable in the eyes of the settler, is its peculiar adaptation to sheep farming and the growth of wool. By a register kept very accurately at Government house, during the whole of the year 1837, it rained 115 days, and was fine and clear 250; and this may be reckoned upon as a fair average of a series of years. In the west of Scotland it generally rains 202 days, and is fine only 163, and many of these days are lowering, with the sun obscured, so that the comparison in this point of dryness is very much in favour of South Australia. It is this peculiar character of the climate which ought to recommend to the cautious settler, sheep husbandry over every other sort of rural industry, the profits of which, if steadily persevered in, will remunerate him in a few years for all the inconveniences of a bush life. This species of farming has been the making of New South Wales, and will be the grand pursuit of the settler in South Australia, which will soon rival the older colony in the fineness if not in the quantity of its wool. This dryness of the climate has also a most favourable influence in the general health of the colony; for except the ophthalmia before complained of, the writer saw nothing indicative of disease. The inhabitants may be said to live almost constantly in the open air—retain for a long time their English ruddiness of complexion—appear free from the prevailing diseases of New South Wales: viz. the dysentery and influenza, and even the children, when kept clean, a very difficult matter in summer time, look plump and chubby."

It was in 1831 that the colonization of South Australia was originally projected; but it was not till 1834 that an act passed the legislature to that effect. By this enactment, South Australia became a crown colony under a governor and legislative council till the population should amount to 50,000, when it is to have a local constitution. Ten commissioners were appointed to carry the act into effect. The most novel feature in the act was a provision for equalizing the supply of capital and labour. It was ordained that the commissioners should not sell the land *under* twelve shillings per acre, and that the proceeds should form a fund solely for the purpose of carrying out free labourers to the colony. Thus the money obtained for the land was to be devoted to the encouragement of emigration. It was settled by the act, that no convicts shall ever be transported to the colony, or allowed to enter it. The commissioners issued their first regulations for the sale of land in June, 1835, at the rate of one pound per acre. They were required by the act to raise a fund of £35,000, but considerably less than the half of that was realized by the sales effected, as £1 per acre seemed to be considered too high by the public. At this time, the newly established South Australian company, with an immense capital, offered to purchase the remaining lots of land, if the price were reduced to twelve shillings per acre. To this proposal the commissioners consented, at the same time giving previous purchasers the benefit of the reduction, by proportionably increasing their land; and thus the required investment was secured.

On the 24th of March, 1836, the Cygnet sailed from Gravesend, being chartered by the commissioners for the purpose of carrying out part of the surveying staff, and for use in the colony during the progress of the survey. The Cygnet carried out the deputy and five assistant surveyors, the harbour-master, store-keeper, and a surgeon; also several labourers to assist in the surveys, and some gardeners. On the 1st of May following, the brig Rapid, purchased by the commissioners as a surveying vessel, left the city canal, and sailed direct for Nepean Bay, Kangaroo Island, where she arrived, being a fast sailer, on the 20th of August, 1836. The Rapid carried out the surveyor-general, colonel Light, who, having served with great

distinction many years in the navy as well as the army, was appointed to the command of her, and entrusted with the important duty of selecting the site for the capital of the province, and to mark out the ground for the first town, before the arrival of the governor and the main body of emigrants. The Rapid also carried out two assistant surveyors, a surgeon, and a few labourers, and had on board a set of surveying instruments, with provisions for twelve months, besides clothing, ordnance stores, surgical instruments, medicines, &c. The Cygnet arrived at Nepean Bay on the 11th of September, 1836, and there landed the store-keeper, gardeners, and females, and disembarked such stores as would not be required during the surveys. On reaching Nepean Bay, colonel Light took command of the whole expedition, and after examining Kangaroo Island, and exploring the entire eastern coast of Gulf St Vincent, he visited Port Lincoln in Spencer's Gulf, where the Buffalo, with the governor and principal officers of the colony on board was expected; but upon examination, it was found that in the immediate vicinity of this port there were no requisites whatever for a capital. There was no good or clear land, and but one spring of water, and that below high water mark. These circumstances, therefore, together with the difficulties and dangers encountered at the entrance of the Gulf and in the immediate vicinity of Port Lincoln, determined the surveyor-general upon fixing the site for the capital on the eastern coast of Gulf St Vincent, whither he immediately returned. The Buffalo anchored at Holdfast Bay in St Vincent's Gulf on the 28th of December, 1836; and on the same day his excellency the governor landed, escorted by a party of marines, and accompanied by the various official personages who had gone out in the Buffalo, together with the ladies of their several families. They were received by the officers and gentlemen who had previously arrived, and fixed their habitation on the plain. His Excellency met the other members of council in the tent of the colonial secretary, where the orders in council, erecting South Australia into a British province and appointing the colonial officers, were read, as was also his Excellency's commission as governor and commander in chief. The customary oaths were administered to the governor, members of council, and other officers present. The commission was afterwards read to the settlers, of whom about three hundred were present, and the British flag displayed under a royal salute. The survey of the town of Adelaide having been completed on the 10th of March, 1837, the representatives of the preliminary sections were put in possession of their allotments on the 23d, and on the 27th of the same month the remainder of the 1000 acre sections of which the capital consists were sold by public auction, realizing an average of £6. 0s. 9d. an acre.

By 1837, the value of town land had risen prodigiously; some allotments having been sold for £80 per acre, and for others, better situated, £160 has been offered and refused. It has been objected to the site of Adelaide, that it is too far removed from the harbour, or Port Adelaide, a distance of six miles. But the objection is obviated by the fact that Adelaide is situated on a small stream, (the Torrens) where water is procurable at least during a portion of the year, and in the midst of a fertile country. The ground between the town and the harbour, also, is a dead level, so that a communication could readily be established between the places by means of railway or canal Port Lincoln, however, seems destined, by most accounts, to supplant Adelaide, at no distant period, as the commercial capital of the colony. The town of Adelaide, situated on the little river Torrens, is laid out on a most extensive scale, but consists at present of houses and stores scattered here and there, chiefly of the cottage order, and composed of very miscellaneous materials. From the rapid increase of monied emigrants, there is a great demand for artizans, and wages are high, but provisions are almost proportionably dear. While the tradesman receives from 10s. to 15s. a day, he has to pay 1s. 4d. for his pound of beef, and 3s. 6d. for his pound of butter. The population of the town in January 1839, was above 3000, but of course, in a place undergoing such speedy evolutions, no statistical statements can hold accurate for a single month. The country around, like New South Wales, is peculiarly adapted for the pasturing of sheep. Since 1837, several thousands have been brought from Van Dieman's Land, and large flocks of sheep and cattle have made overland journeys from Sydney to the colony, not, however, without considerable loss of stock from want of water on the way.

Between South Australia and New South Wales lies a region recently explored by Major Mitchell, and called by him, from its extreme beauty and fertility, *Australia Felix*. This is indisputably the finest district yet discovered in all Australia. "Unencumbered with too much wood," says Major Mitchell, "yet possessing enough for all purposes, with an exuberant soil under a temperate climate; bounded by the sea-coast and mighty rivers, and watered abundantly by streams from lofty mountains; this highly interesting region lay before me, with all its features new and untouched as they fell from the hand of the Creator!" "Every variety of feature," he continues, "may be seen in those southern parts, from the lofty Alpine region on the east, to the low grassy plains in which it terminates on the west. The Murray, perhaps the largest river in all Australia, arises amongst those mountains, and receives in its course various other rivers of considerable magnitude. These flow over considerable plains in directions nearly parallel to the main stream, and thus irrigate and fertilize a great extent of rich country. Falling from mountains of great height, the current of these rivers is perpetual, whereas in other parts of Australia, the rivers are too often dried up, and seldom deserve any other name than chains of ponds. Hills of moderate elevation occupy the central country between the Murray and the sea, being thin or partially wooded, and covered with the richest pasturage. The lower country, both on the northern and southern skirts of these hills, is chiefly open; slightly undulating towards the coast on the south, and, in general, well watered. The grassy plains which extend northward from these thinly wooded hills to the banks of the Murray, are chequered by the channels of many streams falling from them, and by the more permanent and extensive waters of deep lagoons, which are numerous on the face of these plains, as if intended, by a bounteous Providence, to correct the deficiencies of a climate, otherwise too dry, for an industrious and increasing people by preserving in these abundant reservoirs, the surplus waters of the large river; and, indeed, a finer country for

cattle stations than this, can scarcely be imagined. In the western portion, small rivers radiate from the Grampians, an elevated and isolated mass, presenting no impediment to a free communication through the fine country around its base. Hence that enormous labour necessary in order to obtain access in some parts, and for crossing contiguous ranges to reach others, by passes like those so essential to the prosperity of the present colony, might be in a great degree dispensed with in that southern region. Towards the sea coast on the south, and adjacent to the open downs, between the Grampians and Port Philip, there is a low tract, consisting of very rich black soil, apparently the best imaginable for the cultivation of grain in such a climate. The high mountains in the east, have not yet been explored, but their very aspect is refreshing in a country where the summer heat is often very oppressive. The land is, in short, open and available in its present state, for all the purposes of civilized man. We traversed it in two directions, with heavy carts, meeting no other obstruction than the softness of the rich soil, and in returning over flowery plains and green hills, fanned by the breezes of early spring. I named this region Australia Felix, the better to distinguish it from the parched deserts of the interior country, where we had wandered so unprofitably and so long."

Australia Felix may be said to embrace all the territory east from the mouth of the Glenelg as far as the mouth of the Snowy river in 148½° east, the Murray being its northern limit. One remarkable feature in its geography is, that the whole water communication of the territory of New South Wales flows into it. Not far distant from this beautiful country, which is destined at no distant period to outrival the other colonies, are Portland Bay and Port Philip. *Portland Bay* is surrounded by settlers, and already exports potatoes, sheep, and cattle to South Australia. *Port Philip*, called after Captain Philip, the first governor of New South Wales, is an immense bay nearly opposite to Van Dieman's Land. Upon it is situated the thriving town of *Melbourne*, which contains a population of above 2000 inhabitants. Melbourne is built at the falls of the river Yarra Yarra, and is supplied at all seasons with plenty of fresh water. The country beyond it is rich and fertile. Immediately below the town is the port, where a considerable traffic is carried on with the ports of Launceston, Hobart Town, and Sydney.

*Western Australia.* The western coast of Australia consists of Endracht's Land, discovered in 1616 by Dick Hartog, in the ship Endracht; of Edel's Land, discovered in 1619 by a Dutch navigator of that name; and of Leuwin's Land, discovered in 1622 by the ship Leuwin. The coast was surveyed by Dampier and Vlaming, and afterwards by Flinders, Baudin, Péron, and Freycinct, all whose reports were unfavourable. It extends for 800 miles, and consists mainly of a ridge of low steep rocks bordering on a sandy shore, accessible to boats in only a few points. There are occasional rifts in the rock through which torrents pour during the rainy season, but vegetation is either entirely absent or its products are useless. The two most important openings are those made by Shark's Bay and Swan River. Shark's Bay penetrates deep into the coast, with many windings, and would make an excellent harbour, but for the total absence of fresh water. In 1826, the Swan river was explored for fifty miles by Captain Stirling, and the report made of the country on its banks was so highly favourable, that it was resolved to establish a settlement upon it. A colony on the western coast of Australia had been long an object of desire on account of its shorter distance from Britain than the east coast, and of its fine geographical situation to the Mauritius, the Bay of Bengal, Batavia, Singapore, Manilla, and Canton. A project for the formation of a *new colony at Swan River*, without making it a penal settlement, was accordingly issued in 1829. By this project, the government did not propose to incur any expense in conveying settlers to the new colony; but such persons as were to arrive there before the end of the year 1830 were to receive, in the order of their arrival, allotments of land, free of quit-rent, proportioned to the capital which they were prepared to invest in the cultivation of the land, at the rate of forty acres for £3. Those who incurred the expense of taking out "labouring people," which included women and children above ten years of age, were entitled to 200 acres of land for every such person. Captain Stirling was appointed lieutenant-governor of the settlement, with a grant of 100,000 acres; and Mr Peel received 250,000 acres, on condition of taking out 400 emigrants. In August, 1829, a number of settlers began to arrive at Swan river, and to locate themselves along the banks of the Swan and the Canning rivers. By the end of the year, there were in the new colony 850 residents, and 440 non-residents. The emigrants at first experienced great difficulties and hardships; the land near the coast was found to be poor and sandy, and, on the whole, Swan river did not fulfil the promise of its sanguine patrons. However, the town of Freemantle was founded at the entrance of the river; Perth, the intended capital of the colony, about nine miles inland on its right or northern bank; and Guildford about seven miles further east. A town called Augusta was founded at Blackwood's river, near Cape Leuwin, and a portion of the settlers located at St George's sound (lat. 35° 6′ 20″ S. long. 118° 1′ E.) near the south-west extremity of Australia. The Swan and Canning discharge themselves into an estuary nine miles long, and from three to four broad, called Melville water. The entrance to this estuary is over a bar of rocks, with a depth of only six feet at low water; the bar extends about three quarters of a mile, when the water deepens from four to six fathoms near the shore, and upwards of eight towards the centre, continuing thus for some miles, making a fine harbour, if a canal were cut so as to admit of large vessels. The Swan is navigable for boats as far as the tide flows, viz. forty miles. At Perth, it is half a mile wide, but shallow. The Canning falls into the Swan a little below Perth, on the opposite side, and in most of its features resembles that river, but is smaller. Between Perth and Freemantle the land, in an agricultural point of view, is almost worthless, if we except a few small spots; the greater portion of it consisting of sands or sandstone covered with trees and underwood. Other parts of the settlement, however, can boast of good land, on which depasture many thousand sheep. But the colony of Swan river cannot be said, on the whole, to be thriving; and indeed, though it may come to prosper in the course of time, it must be considered for the present, when compared with the expectations of those who founded it, a decided failure.

AUSTRIAN EMPIRE. (*a.*) Great difficulty attends an attempt at a statistical survey of the resources of Austria, owing to the care taken by the government to conceal official, and especially numerical, details, the betrayal of which is looked upon as a crime only second to high treason. Works, it is true, exist, which profess to give minute information on all subjects connected with the government and the country, but they are either deficient in every important particular, or, from the known strictness of the censorship on this head, exposed to the suspicion of wilful misrepresentation. Still, we shall submit to our readers what information we have been able to collect.

The archduchies of Upper and Lower Austria, Styria, and Tyrol, in which the inhabitants may be considered as exclusively German, contain 3,757,368 souls, scattered over a territory of 1710 square geographical miles, giving consequently a population of 2197 per square mile. This scanty population is owing to the mountainous nature of these districts, the average quantity of arable land and vineyards in these provinces giving only 1764 square Vienna *joch** in the geographical mile. The remainder of the surface is mountain, forest, and marsh land. The mountainous districts are, however, by no means wholly unproductive; rich mines of salt, iron, and copper, are scattered through them, and extensive tracts are used as grazing land; but it is evident that the population is on the whole not sufficiently numerous either to draw the full advantage from the land, or to assert any political supremacy over the other provinces. The influence of the centralizing system of government and of fashion, which draws the wealthy inhabitants from the provinces to the capital, alone allows Austria to be counted among the Germanic states of Europe. About 2,500,000 Germans are calculated in the other provinces of the empire as colonists, military and civil functionaries, &c.

The largest portion of the inhabitants of the empire are Sclavonians, who may be classed under four heads:—

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|---|---|
| Bohemians, Moravians, Silesians | 5,802,750 |
| Poles | 4,445,000 |
| Hungarian Sclavonians, including Dalmatia | 4,300,000 |
| Illyrians and Carinthians | 1,200,000 |

amounting together to 15,747,750 souls, or a number nearly equal to the total sum of all the other nations in the empire taken together; viz.—

| | |
|---|---|
| Germans | 6,200,000 |
| Hungarians (Magyars) | 4,500,000 |
| Italians | 4,650,000 |
| Wallachians | 1,800,000 |
| Jews | 475,000 |
| Zigeuner (Gypsies) | 110,000 |
| Total | 17,735,000 |

The Sclavonian inhabitants, important as their numbers and geographical situation ought to make them, have ever been treated with the least consideration by the German rulers. In the present state of the empire they form two distinct and extensive divisions, one to the north and the other to the south of the Danube, between which the Germanic territories lie inclosed in the form of a wedge. The northern Sclavonic mass, including Bohemia, Moravia, Silesia, Gallicia, and the north-west quarter of Hungary, contains a population of about 12,500,000 souls, speaking three or at most four dialects of a common language, none of which differs from the other so much as the Danish tongue does from the High German. A traveller possessing a moderate knowledge of the Bohemian or Polish, which are the only written dialects, can travel with ease and make himself understood in all the other Sclavonic districts. But, though possessing so remarkable a bond of union, and long involved in the common fate of subjection to strangers, there seems never to have existed anything like a wish to draw together for mutual support or defence. This may partially be explained by the circumstances in which these different countries were at the time of their incorporation into the Austrian empire. The Bohemians had long considered themselves as forming part of the German empire, and in their rivalry with the other provinces seem to have been in some degree ashamed to assert their nationality. Until lately no Bohemian of the higher classes studied his native tongue, and all were in general flattered by being taken for Germans. They consequently had but little sympathy with their unpretending brethren, the Slowacks of Hungary, joining in the supercilious but groundless contempt which the Hungarians of Tartar descent express for them.† The Poles were long too much occupied with the hope of restoring the independence of their country within its former limits, to look beyond the Carpathians; and, indeed, it was not until the weight on all was increased, as it has been of late years, and all hope of external help cut off, as it at present seems to be, that any of the nations in the territories we have alluded to thought of looking upon their neighbours and fellow-sufferers as brothers and supporters.

Within the extent of country we have described, every mountain, every river, every town, every village, bears a Sclavonic name; a sufficient reason to make strangers, of whatever nation, despair of success in converting the inhabitants into Germans or Hungarians, or in making them assume any foreign language or manners. Many things too have contributed of late to promote a feeling of nationality on an enlarged basis amongst them. All these nations, isolated from the rest of Europe by the Austrian policy, were thrown more upon their own internal resources, which they have considerably improved. A natural consequence has been a relative improvement in the state of these different provinces, exactly proportioned to their respective means. In Bohemia, where the average of the population gives 4133 inhabitants to a square geographical mile, and where the soil is much less productive than in Moravia and Gallicia, manufactures have been introduced with considerable success. An interesting work on this subject shows that Bohemia possesses seventy-five glass-houses, of which twenty produce plate-glass; 126 paper-mills; and a great number of iron, copper, and lead works. The quantity of lead produced by the mines in 1834 was, 1321 tons; of arsenic, 61 tons; of iron there was produced, rough 11,027 tons, cast 9738 tons. The manufacture of percussion caps for guns and cannon is carried on extensively, 65,000,000 caps being produced annually. In the year 1835, 14,000 tons of beet-root were manufactured into 7,500 tons of sugar; 120,000 cwt. of flax into linen; 30,000 spinners produced 85,000 cwt. of cotton yarn; and 1,400,000 pieces, of from twenty to thirty-five yards, were printed; 80,000

* Equal to 101,518 French hectares.

† The Hungarian proverb says, "Tot nem ember." (The Slowack is no man.)

cwt. of wool was manufactured, and 5200 looms produced 120,000 pieces of woollens from fourteen to twenty yards per piece. Various other branches of industry are attempted with more or less success, and sufficiently demonstrate the industrial spirit of this part of the empire. It must, however, be confessed that the above statements respecting this province, together with its very considerable agricultural produce, are far from giving a true idea of its productive power. The Austrian National Encyclopædia estimates its farming produce as follows:—

"Wheat, 3 millions Metzen, (1 Metzen = 1·72 bushels English); rye, 15 millions Metzen; barley, 6½ millions Metzen; potatoes, ———; wine, 26,145 Eimer, (the Eimer = 15·9 gallons English); 1,000,000 cubic toises of fire-wood. The amount of live stock, which is on the increase, is 142,036 horses, 243,779 oxen, 650,779 cows, 1,590,672 sheep. Game of the choicest kind in incredible quantities, stags, roebucks, wild boars, pheasants, woodcocks, &c."—i. 336.

Bohemia must be looked on as the most flourishing province of the empire. The nobility is enlightened and public-spirited, and pains are taking to ameliorate the condition of the lower classes. The number of forty grammar schools and 2556 peasants' schools gives one of the former for 95,000 inhabitants, but of the latter one to 1120 inhabitants. The middle classes are unfortunately possessed with a passion for entering into the innumerable government bureaux, which drain the country of so much talent and exertion, a loss which would be more seriously felt, if the sway of the noble landed proprietors were less mild, and the spirit of industry less spread among the lower orders.

These remarks may be extended in a general way to all the other Sclavonian provinces, which, although possessing sources of inexhaustible wealth, make but slow advances, owing to the same restrictions. A national spirit is however awake in all, and the education of the peasants has become an object of serious attention, the example of Bohemia rapidly spreading to the neighbouring Sclavonic districts. In the Slowack country, public-spirited individuals have established schools, the Hungarian constitution enabling them to do so unimpeded. Gallicia alone remains behind in this race of improvement, the government not establishing, and the influential men neither demanding, nor, indeed, seeming to wish for, schools for the improvement of the lower ranks. Some provinces, however, labour under peculiar grievances of their own.

On Gallicia the whole weight of the iron sceptre of Austria has of late years been doomed to fall. No sooner was the insurrection in the kingdom of Poland completely subdued, and the means of future resistance, as far as the Russians could discover them, eradicated, than the lenient policy which Austria had shown towards the Gallicians changed. Prince Lobkowitz, whose humanity and prudence had saved the province for the empire, was replaced by the Archduke Ferdinand; and a system of inquisitorial proceedings has for the last three years been carried on, which has totally alienated what attachment had begun to spring up among the people towards their new rulers. The object of the government in all these proceedings is an absolute mystery. It is true that the people of Gallicia manifested, in 1830, the most ardent sympathy for their brethren at Warsaw, and immense supplies of money and provisions were daily sent over the frontier. The governor, aware of his inability to suppress the working of these natural feelings, wisely chose to wink at such irregularities, rather than expose the province to the dangers arising from still greater excitement, if he forcibly attempted to restrain them. Thus, when the storm had passed over, the Gallicians could only rejoice with trembling that it had not overwhelmed them in its career; while they were gratefully sensible of the mild treatment they had experienced from rulers whose apprehensions seemed likely to dictate a very different policy. This was the moment for a prudent minister to seize to attach such an important province to the government by the strongest ties. But, so far from thus improving the opportunity, researches were gradually made after individuals, who had either served in the revolutionary army, or carried on correspondence with Poles in the Russian territories. These inquiries were also instituted with all the wanton harshness of delegates in a remote part of the empire, and screened from public opinion by the secrecy of their proceedings. Men of all classes were summoned to Lemberg; members of the most illustrious houses,—peasants, whose poverty and ignorance were no match for the intrigues of such an inquisition,—and Jews, whose helpless situation exposes them to every species of tyranny—were compelled to spend months in attendance on this tribunal; and the scourge of the executioner is said to have been frequently used in secret to quicken the confessions of tardy witnesses. Every day saw transports of prisoners in irons, under military escort, travelling towards Lemberg, many of whom died in prison; while those who, after a long delay, and being exposed to every insult, were at length released, received no other satisfaction than the certainty that all these inquiries had led to no result. Not a single trace of any thing like a serious conspiracy against the Austrian state could be discovered, nor could any thing worthy of publication, still less of punishment, be tortured out of the imprudent marks of sympathy shown by the most unwary to their suffering countrymen who had taken refuge among them. The greater part of those who laboured under the heaviest suspicions were set at liberty, ignorant, for the most part, of the charge intended to be substantiated against them, and against which no means of defence could consequently be provided. The province in the meantime was treated as if it had been in a state of actual revolt. Upwards of 50,000 regular troops were quartered through it, and instructions were given to the officers and civil *employés* to mix as little as possible in social life with the inhabitants. The effect which such treatment must have produced upon a high-spirited people it is easy to surmise, and the government, when tired of so useless a system of rigour, will probably be unable to discontinue it when it shall desire to relax.

The Sclavonian population of the southern states of the empire are not less favourably situated, being in possession of the long tract of mountainous country which stretches eastward from Tyrol, following the course of the rivers Save and Drave, from which a branch, diverging at right angles, runs south along the sea-coast through Dalmatia. The provinces of Carinthia, Carniola, Istria, Dalmatia, Croatia, Sclavonia, and what is called the military frontier, are peopled by Sclavonians, with the ex-

ception of the principal towns; and, although the state of civilization varies so much in each of those provinces, still there is a spirit of nationality prevalent amongst them, which makes them fraternise like men having common interests. The military frontier, Croatia, Sclavonia, and Dalmatia, form part of Hungary, and have a prospect of waiting sometime, if the improvement of their social state is to depend on the general progress of that country. Istria, Carniola, and part of Carinthia, may, with the exception of some mountain districts, be considered as equally advanced in cultivation with Bohemia. It is worthy of remark that the valuable mining districts, with the exception of those of Transylvania, lie all in Sclavonic districts, the Sclavonians, as original inhabitants of the country, having probably maintained their ground in the mountainous chains which limit and intersect the empire. Although mining is carried on to a considerable extent in these latter provinces, the mines of Istria alone furnishing a large sum annually to the imperial treasury, yet it is probable that the entire riches of these mountainous districts are far from being ascertained. There is, perhaps, no spot in Europe so remarkable for singular natural varieties, nor any so little travelled, even in our curious age, as the chain extending from Carniola, through Croatia, into Hungary: the want of roads, but especially the depression of all individual exertion by vexatious *bureaux* and restrictive laws, prevent the inhabitants from seeking new sources of industry, as well as from turning those already discovered to the best account. In Carinthia are mines in which native steel is found, and yet the English manufactured steel is sold cheaper at Trieste than the mines can afford to deliver their produce* at that city. Many similar instances of undeveloped resources might be adduced from different parts of the empire, but no where are they so striking, on account of the vicinity of the sea, and the consequent facility of finding a market for produce of all kinds. The Sclavonian population of these provinces is said to amount to 2,500,000 souls; the dialect they speak is more ancient in its grammatical forms than that of the Bohemians and Poles, and bears more resemblance to the Russian and Servian.

The race of inhabitants of Tartar descent, who, under the name of Magyars, claim the moral, although by no means the numerical, supremacy in Hungary and Transylvania, are distinguished from the other nations of the empire by an energy of character which has only lately taken a useful direction. This valuable pre-eminence they owe to their invincible attachment to their old institutions, which, imperfect as they are acknowledged to be at the present day, have kept alive the pride and energy of the people, while the nations around them have sunk into a melancholy indolence and supineness. In number not exceeding 4,500,000, and surrounded by Sclavonian and other tribes to the number of 6,000,000, they maintain an undisputed superiority within the country, and have even formed the chimerical notion of forcing their language and manners upon the rest of their fellow-countrymen. But a more useful and nobler direction has within a few years been given to their exertions by the patriotic spirit of some distinguished men, among whom the most conspicuous at present is Count Stephan Szeczeny. This nobleman has almost single-handed, in opposition to all the direct and indirect impediments which a blind and jealous government and rude national prejudices could raise against him, opened a steam communication from Presburg to Constantinople; thus furnishing his country with a new and invaluable field of enterprize, at a moment when the endeavours making to draw a portion of the trade of the East once more over Asia Minor to Europe give a cheering promise of prosperity likely to accrue to his country by his means. He is accordingly looked upon as its greatest benefactor at the present moment, although suspected of not being warmly attached to that kind of reform which would raise the lower classes of his fellow-citizens in the social scale. It is, perhaps, also for this reason that he has been able to avoid direct collision with the government, which views every step taken for the advantage of Hungary with a jealousy natural to those who prefer a weakness which they can easily guide to a strength that they might have cause to fear. The happy idea of attracting foreign trade into Hungary, by way of the Danube, must in a short time show its effects by encouraging the spirit of adventure, which the natives possess in abundance, to strike into that useful channel; and, if prosecuted on a liberal footing, may enable them to assert their own rights against the encroachments of the Russians, which their government seems inclined to neglect. This jealousy of Hungary must be conceived in its full force, before indifference on the part of the Vienna cabinet to a Russian settlement at the mouth of the Danube can be imagined; for, according to all western calculations, the stoppage of this grand outlet for its productions must inflict a much more serious wound on the future prosperity of the empire at large, than even the contagious neighbourhood of a powerless republic could on its political tranquillity; while the possession of Cracow, should it eventually be conceded, will, we fear, prove but a poor indemnity for immeasurable sources of wealth, which it will be impossible to cultivate without such a channel of communication with foreign lands.

The Magyars have, as it is, valuable rights. Their language is used in all public transactions, and their nationality fully respected. No passports are necessary within the country, in which they are not overburdened with *bureaux*, like the other provinces. Separate chanceries at Vienna transact the business of Hungary and Transylvania, and their diets impose only the taxes of which they approve, and with which they are by no means liberal. In return for this exemption, every thing Hungary exports is loaded with a heavy duty, even on importation into the other provinces.

If the Sclavonic nations of the empire have reason to complain of the little care taken to consult their national customs and feelings, it may be imagined that the Italians are scarcely less exposed to annoyance on this head; not that they by any means stand on the same footing with the Sclavonian nations, for the Italian language is that used in all the public offices and courts of justice in the united kingdom of Lombardy and Venice. The Austrian code of law has been translated into Italian, and is studied in that language in their universities: and the Italian jurists have also contributed very much towards its improvement.

* The steel hanging bridge across the Danube canal at Vienna, suspended from only two main chains, one at each side, is the only one of the kind in Europe.

Still, as the finer feelings in an enlightened nation are spread through a wider circle of its population, and many things are for them oppressive of which a less cultivated people would scarcely be sensible, there can be no doubt that the invincible hostility they bear to their present rulers is not without foundation. The repressing character of the Austrian sway, under which mediocrity makes the greatest progress, while talent and energy are looked upon as two disturbers of the public peace which cannot be subjected to sufficient control, is little suited to the tastes of an ardent people, among whom democratic ideas have descended as a legacy from the flourishing days of their state. Many concessions have been made by the Austrians, in order to conciliate the inhabitants, especially of the cities, where the direct taxes upon industry are much lower than in the provinces northward of the Alps; but the same system of innumerable *bureaux*, and the same destructive institutions of monopoly, weary out the aspiring spirit, and cramp the nerves of enterprize. Yet the Italian provinces must be reckoned among those whose subordination depends upon the presence of an imposing military force; and, to the skill with which the government subdues the discontented of one province by the power it borrows from another not much less dissatisfied, it is indebted for the effective subjection in which all are retained. But an armed force, of even more approved reliance than Austria could muster, would never have succeeded so completely in establishing the power of the government in a manner which renders all thoughts of resistance so hopeless that they are abandoned on all sides. Much subtler, though, as it would appear, more expensive, checks on the ebullitions of popular spirit have been forged, the tendency of which is for the present to tame the refractory by presenting innumerable obstacles to every attempt at innovation, and eventually to destroy all dangerous energies so timely, by means of early training, that the task of governing shall be rendered easy, and constraint robbed of its bitterness.

The undisputed sovereignty of the emperor in every province is the first demand upon the subject, and, as the royal person is multiplied in each by thousands of representatives, the duty of submissive respect is one of those most frequently called into practice. It is part of the plan of government, in every German state, to employ one half of the nation to govern the other; and the paternal care of the sovereign is studious to prevent the number of *employés*, who live at the expense, and, as they doubtless imagine, for the benefit of their fellow-subjects, from being diminished. The Austrian state *Schematismus* presents a list of upwards of 25,000 individuals bearing appointments in civil offices, and the number of those whose appointments are either of too low a rank, or of too secret a nature, to be introduced in company with the first men of the country, may amount to as many more. Let us imagine these civil officers, dependent solely on the crown, dispersed through a nation which contains so many jarring elements, that it unfortunately seems to be a matter *primo loco* decided, that much loyalty cannot be expected;—let us follow each of these gentlemen as he enters into society, anticipating defection in all out of office, and necessarily disposed to vindicate the authority that lends him consequence;—let us add to these the number of 13,000 officers and non-commissioned officers of the staff and commissariat department, all of whom are likewise to be found within the empire, at the head of an army, which on the peace establishment amounts to 270,000 men, and we shall see that the government has monopolized, by means of these individuals and their families, a powerful number of defenders in every social circle. When we add that the secrecy observed in all transactions,—especially, however, in the administration of justice,—screens every individual from the share of responsibility which every public officer ought to incur towards the public, some idea may be formed of the fearful power thus created, and of the abuses to which it must be subject. If we conclude these officials, civil and military, to require a rather superior degree of education to enable them to fulfil their respective functions, it must be evident that an immense mass of talent is abstracted from the middle classes of the nation, which, in the pursuit of science, agriculture, commerce, or the fine arts, could not be otherwise than productive of the greatest benefits. The nature of their employments in the *bureaux* is no where of a tendency to encourage a serious cultivation of any of the above-mentioned useful sciences in the *employés;* while on the public they may be said to operate in a directly prejudicial manner, as no individual can take a step of the slightest importance in life or business, without requiring the sanction of some of these government officers, and finding no small difficulty in procuring permission to become an industrious member of society.

This leads to another grand source of influence to the government,—the system of monoply in trade. A fact that the history of the last fifty years has sufficiently proved, is that popular tumults seldom originate amongst the peasantry of a country, and that the great problem of internal police is to keep the inhabitants of the towns satisfied and tranquil. To this end every city in Austria, beginning with the metropolis, is allowed to grant the freedom of trade to only a limited number of individuals, so that the mere fact of an apprentice having served his time by no means warrants his setting up in business. Strangers, who come into a city, must either show that they are provided with means of support, or that they can procure employment, otherwise they are at once expelled. In return for this privilege of exemption from much competition, the merchant, tradesman, &c., pays a tax of no trifling amount, bearing the candid designation of earnings-tax. In this manner the whole industrial class in Austria, being in some measure dependent on the government, which naturally has it in its power to introduce a system of competition at will, and not dissatisfied with a state of things which assures to it a certain competence apparently on easy terms, is gained for the present system. It does not seem that any exact compact exists between the trading classes and the state as to the number of privileged individuals in every branch; the butchers, however, form an exception, their number being fixed. This immunity is purchased by an extra tax called the slaughtering tax. Merchants and bankers are kept from increasing in number by its being necessary to show a certain amount of capital as a qualification for the permission to enter into trade. Whatever inconveniences arise from such a municipal system, and that they are not few in number will easily be supposed, are thought to be fully compensated for by the tranquillity which is stated to reign through-

out the empire. Although numerous arrests take place annually in the different provinces, and the state prisons are full in all directions, yet, as the capital continues tranquil, the most self-complacent comparisons with other lands are constantly published, and strangers are forced, at length, to believe what they hear on all sides repeated. It is true, that Vienna bears to the eye of the stranger a most smiling appearance. The city, although small and narrowly built, is kept remarkably clean; and, no paupers being tolerated in the streets, and, indeed, all signs of pauperism being removed by the municipal and police measures alluded to above, the very absence of all the inevitable casualties of humanity has something awful in it to the considerate observer, even though he may never have heard of the artificial means used to sift its inhabitants.

The following anecdote will, however, serve to show that in Austria the same means produce the same results that they do in other countries, and that the government has found no spell to charm useful effects from measures which we should think tended to the destruction of the social state. The number of the butchers in the capital being limited, nothing was more natural than that they should conspire against the public. They were therefore compelled to submit to a monthly assize, fixed by the magistrates, according to the reports of sales furnished by commissaries, from the different cattle fairs. These magistrates, together with the commissaries, it is publicly asserted, are taken into the pay of the guild, which can afford to deal more liberally towards them than even the state itself; and the manner in which this arrangement came to light was as follows:—On the first approach of the cholera morbus to the metropolis in 1831, the court, fearing scenes of disturbance on its appearance, took measures, among other devices, for improving the state of the poor, to ensure a sufficient supply of provisions and to prevent any advance in price in the most necessary articles. Among the rest, the butchers received an advance of 1,000,000 florins of silver to buy up beasts, and to secure them an indemnity for not raising the price of meat in case of an advance in that of live stock. When the danger had passed over (no advance in the price of cattle having taken place) they were called upon to account for the sum which they had naturally not neglected to draw, and a commission was appointed to audit the accounts. It seems, however, that, after an exercise of no common ingenuity, a considerable sum remained for which no one could account, when on a sudden the sittings of the commission were broken off, and the papers disappeared. The public, however, having heard of the circumstance, some murmurs arose, and an inquiry was set on foot, at the desire of some influential officials who were not interested directly in the matter. The first sittings of the commission of inquiry led to the discovery of the enormous conspiracy existing to defraud the public and the state, in which many men holding elevated situations were more or less implicated. A panic struck the guilty, and the price of butcher's meat was reduced in the ensuing month from ten kreutzers to six kreutzers per pound. As the commission proceeded, however, the ground was found to be more and more delicate the further they pursued their researches; their case became difficult, and their steps irresolute. This was no sooner remarked by the tradesmen than, assuming an air of confidence, they threatened to shut up their shops with one accord and starve the capital, well knowing the fear entertained in certain quarters of discontent among the mob. No preparations having been made to prevent such a measure, the government was obliged to submit; the inquiry was suppressed, and butcher's meat is at the present day sold at Vienna, a city situated in one of the most fertile districts of Europe, after a succession of favourable seasons, at ten kreutzers, or 5d. per pound—the bones and fat being apportioned at the same price to the purchaser in proportion to the weight of consumable meat that he demands. This, then, is the true state of the capital, which boasts of its tranquillity, while all the other countries of Europe are disturbed by liberal factions. Let us only conceive the immense tax levied daily on the inhabitants by tradesmen of all kinds, who are joined to a greater or less extent in similar combinations, and who thus absorb sums which ought to form a continually increasing capital, capable of being most usefully employed; let us add to this the fact that, while new inventions and the improved state of agriculture are increasing the productive power of the country, the price of the necessaries of life in Vienna rises annually, while it is in the power of a few tradesmen to rouse the populace to rebellion at any moment they please, and we shall be able to judge of the degree of praise to which such a tranquillizing policy is entitled.

Another rich resource of influence for the government arises from the extensive patronage of the church. The superior dignities are stated in the Austrian Encyclopædia to consist, including those in Hungary, of eleven Catholic archbishoprics; fifty-nine Catholic bishoprics; 151 abbots and probsts with domains and revenues; 156 titular abbots and probsts (deans); besides an innumerable host of canons, deacons, archdeacons, and heads of convents. The monasteries have been reduced to the number sufficient for the service of the churches and the care of education, but still the number of the clergy is immense, as may be inferred from the above enumeration of the hierarchy; in addition to which, the united Greek church has five bishoprics; the Armenian Catholics, one archbishopric; the schismatic Greeks, one archbishopric and ten bishoprics; besides inferior dignities, all of which, together with the nomination to all parish cures, are either presented by the crown or under its influence. These charges are also well provided for. The Austrian Encyclopædia states the revenue of the archbishop of Gran, primate of Hungary, at 360,000 florins (£36,000), but common report values the see at three times that sum. The archbishoprics of Prague, Olmütz, and Vienna, are proportionately well endowed, and, indeed, the revenues of the church, including the tithes, when compared with the price of necessaries in so productive a land, may be said to exceed in amount those of the clergy in any of the great states of Europe. Independently of the effect which the prospect of this golden harvest may have upon the members of the clergy, it is certain that they look upon the mutual support of church and court as equally indispensable to both parties; and, while the authorities protect and put them forward upon all occasions, they are not remiss in faithfully preaching and teaching the enjoined doctrines of non-resistance and passive obedience. They have of late been considered so powerful an arm towards resisting the innovations of the age, that it has

been planned to increase their influence, even at the risk of once more receiving a lesson which must still be too recent to be forgotten. The proposal to place the whole of the elementary education throughout the empire in the hands of the re-established Jesuits is said to have been recently discussed and approved in the council of state, but delayed, partly perhaps from the apprehension that the public mind, which is decidedly opposed to the increase of clerical influence, was not yet sufficiently prepared for so bold a step.

The peace establishment of the Austrian army is reported by the Austrian Encyclopædia to consist of 190,000 men, infantry—38,685 men, cavalry —and 17,800 men, artillery, exclusively of the staff, engineers, six garrison battalions, and seven military frontier regiments, in all 270,000 men. This force can be raised in time of war to 750,000 men, by calling out the militia battalions of each regiment, the reserve, and what is called the Hungarian Insurrection.

For the recruiting of these forces the whole empire is divided into recruiting districts, the depôt of each regiment remaining in its appointed spot. The regiments consist of three battalions of about 1200 men each, to which two others must be added, which, under the name of militia battalions, are called out only on extraordinary occasions. The territorial distribution of the recruiting depôts is as follows :—

| | Infantry Regts. | Rifle Bns. | Cavalry Regts. | Artillery Regts. |
|---|---|---|---|---|
| The German States, Upper and Lower Austria, Tyrol, and Styria - - - | 7 | 4 | 6 | 2 |
| Bohemia, Moravia, Silesia, Gallicia - - - | 26 | 6 | 18 | 3 |
| Illyria, Croatia, Dalmatia (including the military frontiers) - - - | 23 | | | |
| Lombardy and Venice - - | 8 | 2 | 7 | |
| Hungary furnishes a quota granted by the Diet, but is subject to no conscription. | 14 | | 12 | |
| Total | 78 | 12 | 43 | 5 |

The troops furnished by Croatia and Dalmatia belong to the Hungarian contingent, but are included in the above survey with Illyria.

From this sketch it is apparent that the Sclavonian districts contribute by far the most to the defence of the land; but although the recruiting takes place in a national manner, and the privates of the different regiments are all countrymen, care is taken that the officers be mixed as much as possible. The privates are in general fine strong men, and the arms and equipments are equal to those of any army but the British. They are drilled with great care, and go through their exercises with precision, but with slower movements than the Prussians and Russians; and it is perhaps on account of the numbers who understand German but imperfectly, that the assistance of the *flügelmann* is still retained to interpret the word of command. Of their artillery the Austrians are proudest. It is certain that it is numerous and well furnished, having counted 1000 pieces of ordnance ready for service when the occupation of the Roman states took place. The recruits pass through a regular course of mathematics, with practical and theoretical gunnery; and the corps of bombardiers receives all such as distinguish themselves by skill and talent, from which step they have a prospect of advancing as officers. This branch of the service is the only one which holds out this prospect, for, by a singular arrangement, in a country where the troops are raised by conscription, the regulations prohibit such promotion in the other branches. The annual practice at the target with shot and shells of all dimensions takes place in the months of July, August, and September, and is conducted with scrupulous regularity and attention. The rocket corps, under the command of General Augustin, at Wiener Neustadt, have not only much improved the composition applied to this formidable weapon, but throw it with wonderful precision and security.

It would be too much to expect from troops raised under the circumstances in which many of the Austrian provinces are placed, any thing like the spirit or *amour propre*, which prevails in the armies of France and Prussia. The whole system of discipline and treatment of the men is also different from what is in use among the other German states; the cat-o'-nine-tails being in almost unceasing employment, and not being looked on in the same degrading light as in other services. But the absence of this susceptibility is considered to be compensated for by a certain steadiness and uninquiring submission which prevail among the men, and which render them useful instruments for the government. A striking proof of this obedient disposition, and not less so of the security with which the government relies upon it, was afforded on the late occupation of Cracow, when the militia battalion of a Polish regiment formed part of the corps ordered upon that expedition.

The amount of the army estimates, as indeed that of every branch of the public expenditure in Austria, is one of the state secrets, and it would be useless to attempt calculating it, as the precise number of troops kept on foot is never known, and varies considerably even in time of peace. There are reasons, however, for believing that this department is managed with a greater attention to economy than any other. That the war-office exercises a more effective control over its agents than the civil boards can do, is perhaps owing to the strict attention paid to seniority in the service in all promotions above the rank of colonel. This naturally throws a number of men together who are actuated by a spirit of rivalry towards each other, but who receive in the indisputable command of the sovereign a constant point of union. As this council has obtained an unhappy celebrity in the history of the country, the loss of every battle since the memorable thirty years' war having been attributed to its influence, we must explain somewhat of its construction. The usual order is that the senior officer in the service fills the place of president, and has a council of five generals, with whom all purely military affairs are discussed in secret. Under the control of this council the commanders of the forces stand in peace and in war, and the difficulty of carrying on operations in the field to the satisfaction of so many directors, is said to have been seriously felt in the French wars even by the Archduke Charles, whose rank and talents were not sufficient to free him from these official shackles. His total withdrawal from all connection with the war-office is generally looked on at Vienna as the effect of disgust. Under the president eleven councillors, partly military men and partly civilians, form a council of reference and debate for the dispatch of ordinary business, and divide between them the branches of the ordnance, the quartermaster-general's and the adjutant-general's departments, the commissariat, the store-

keeper's offices, &c. Four councillors of justice discharge the duties of judge advocate. The president, not being a responsible minister, has no power beyond the transmission of the directions he has received, and the councillors, being too nearly his equals in rank to depend on his personal approbation, enjoy individually a great latitude of discretion, and can only be made responsible for error or remissness after the mischief has been done. This system naturally affords a tolerable control in all the subordinate details, but destroys the energy and celerity of action which are the soul of military calculations. For this reason the Austrians were always well provided in cases which it was possible to foresee and to prepare for in time, but, when matters took an unexpected turn, and resources had to be developed on the spur of the moment, every cord to which the general trusted was sure to break under his hand.

The term which conscripts had to serve (fourteen years) has been reduced lately, and may undergo a further modification, should the prospect of undisturbed peace present itself. This and some other improvements in the army are ascribed to the influence of Count Clam Martinitz, who has for some time been the representative of the military department in the ministry.*

The other branches of the state expenditure are not less carefully concealed than the army estimates; many of them most probably are not even known, as accounts are said but seldom to be rendered to the finance minister from many departments; while two, the police and the foreign departments, are totally exempted from such responsibility. The amount of the revenue is thus, Austrian Encyclopædia, stated:—

"The revenue of the country is generally estimated at 150,000,000 florins in silver. This sum is produced by the land-tax, the earnings-tax, the legacy-duty, excise, tolls, and fiscal dues; the regalia, (to which belong the customs, stamp-dues, tobacco and salt monopoly, the post, lottery, and mint profits,) and the domains. The lands of Hungary and Transylvania are, it is true, not subject to the greater part of the above taxes, but are bound to furnish for the use of the army a great number of supplies in kind."

This sum, about £16,000,000 sterling, which ought to be a comparatively small sum for a state possessing the amazing internal resources of Austria, is made to fall very heavily on its inhabitants by the manner of raising it. From the above paragraph it is evident that the principal taxes are direct contributions from the property and industry of the nation; which is, however, exposed to another severe system of taxation arising from the municipal and *bureau* system. From this last-mentioned sort of contribution neither the court nor the country derives the slightest advantage; but so deeply is it interwoven with the present state of things that nothing short of a total change of system could do away with it.

The land-tax may perhaps be considered as the most important, and is levied in every province from the possessor of the land. It amounts on an average to fifteen per cent. on the produce of the soil. The crops are not valued annually, but an average taken in the year 1834, by commissions established for that purpose, is definitely fixed as a standard for the archduchy of Lower Austria. In the other provinces, in which an exact measurement of the land with its gradations of cultivation is in progress, a provisory estimate has been assumed until the work is completed. Buildings of all descriptions in the country, in villages and towns excepting the capital town of each province, are assessed according to their size and value, and are divided into twelve classes, the highest of which is rated at £6, the lowest at about 2s. per annum. This includes all agricultural buildings and manufactories, as well as dwelling-houses. The metropolis and the provincial capitals are differently rated, the house-tax in these being an assessment on the rent which the houses produce, or at which they are valued, amounting with fees and dues of all kinds to not less than thirty-two per cent. on the income of the property.

The earnings-tax (Erwerb-Steuer) is one, the produce of which must bear no proportion to the detrimental effect, which, in conjunction with the system of monopoly we described some pages back, it must have upon the industry of the nation.

The payment of the earnings-tax is incumbent, 1st, on the class of manufactures; 2dly, the classes of traders, especially all dealers in raw materials, and general merchants; of these there are three which pay in Vienna and the environs for two (German) miles round, 1500 florins (£150), 1000 florins (£100), and 500 florins (£50) per annum; and in the provinces 1000 florins, 500 florins, and 300 florins; 3dly, the classes of artists and artisans, including especially all persons enjoying simple licences to carry on manufactures or trades, patents, &c., shopkeepers, hawkers, &c.; 4thly, that kind of industry which consists in services rendered, or in leaving the temporary use of any thing to another, for instance, teachers of dancing, music, fencing, languages, keepers of schools, &c., brokers, bill-brokers, agents, advocates, &c. The tax paid is estimated and classed in all cases according to the nature of the occupation.

In the Lombard-Venetian provinces this tax is so much modified that it does not exceed one-sixth of what is paid in the countries north of the Alps. In Hungary no tax of the kind is paid. The butchers pay in addition a slaughtering tax† of 10s. per beast, and Jewish butchers still more. The Jews form an especial branch of taxation. Those who enter into trade are obliged to prove their property, and pay a very heavy property-tax; in Gallicia a heavy impost is laid on the candles with which they celebrate their sabbath, and festivals.

The legacy-duty varies on all sums above 100 florins (£10), according to the degrees of relationship, from ten, five, to two per cent.

But not only bequeathed property is encumbered with a transfer-tax in Austria; almost all transfers of land or houses are attended with heavy fees for registering, &c. Such purchasers of land as do not belong to the noblesse are either obliged to purchase the rank, or pay some of the contributions doubled; and, even after receiving the letters-patent from the emperor, high fees have still to be paid if the proprietor wishes to be admitted into the provincial states. From this latter distinction,

* The Austrian *navy* is under the management of a naval commandant at Venice. It consists of from thirty to thirty-four vessels of war, of which three are ships of the line in ordinary, five frigates, five sloops, eight brigs, and six schooners.

† This tax has by the last regulations been incorporated with the excise.

as we observed before, no advantage whatever is derived; but the patent of nobility, besides freeing an estate from the extra taxes, exempts the family from the military conscription.

The excise is also a highly important branch of revenue, and embraces, 1stly, all manufactories of beer, wine, and spirits, liqueurs, malt, &c.; 2dly, provisions of all kinds carried into the metropolis and provincial capitals for consumption; 3dly, it is paid by all innkeepers, butchers, &c. in the country on the provisions they offer for sale.

The customs' duties were until lately rated so high, that the revenue arising from imported goods could not possibly cover the expense of the frontier guards and custom-house officials, while those articles which the country cannot produce in sufficient quantity, and of a quality to compete in some degree with foreign productions, are supplied in abundance by means of one of the most daring and extended systems of smuggling that was ever formed. The chief seat of this contraband trade is said to be the Lombard-Venetian provinces, and it is related as a fact that the seal of the Milan custom-house was some time back for a long period in the hands of the smugglers, who had substituted a forged one in its place. But the cordon of frontier guards is destined also to protect another branch of the revenue—the imperial monopolies. These consist chiefly of tobacco and salt.

Tobacco is an article indispensable to the comfort of a German or Sclavonian, is monopolized by the government in all the provinces except Hungary. There are several manufactories against which might be urged the same objection that we started when speaking of the industry of the empire, for they are conducted by agents on account of the government, naturally at a much greater expense than could be done by individuals working on their own account. Even in so trifling a matter as the preparation of this plant for smoking, the cautious spirit of the government is discernible; for, in order to secure a constant supply of the usual qualities, tobacco of a superior flavour is never sold; but an equalizing mixture is applied, which reduces the best to the ordinary level, and the public is never allowed to enjoy a superior article, lest an unfavourable season should reduce the quality of the stock and cause dissatisfaction. As the consumption is immense, and that which is bought raw is sold at 2s. per lb. the sum it brings to the treasury must be large.

The wealth of the Austrian states in salt is every where betrayed by the names of countries and towns; Salzburg, Gallicia, Hall, Hallstadt, Hallein, are all named from salt.

Some years back the entire production of mineral salt was calculated at 3,188,081 cwt., of boiled salt 2,117,370 cwt., of sea salt 550,000 cwt., consequently together 5,885,451 cwt., the greater part of which was consumed in the country, part exported, and part applied to salting sea fish.

The salt mines and pans are managed, like the tobacco manufactories, by civilians, for the profit of government, and, like the former, must be costly. But these and the other mines in different provinces occupy a great number of hands, and patronage, as we have already seen, has also its worth. The mines of Hungary alone occupy 3,300 hands. The following table gives an idea of the importance of mining speculations in Austria, but much of the produce here reckoned is on private account.

| | Quantity gained per Ann. | Price per cwt. in Florins. | Value in Florins. |
|---|---|---|---|
| | cwt. | | |
| Gold | 23 9-10ths | 72,500 | 1,749,222 |
| Silver | 462 17-20ths | 4,800 | 2,318,252 |
| Copper | 54,765 | 48 | 2,629,336 |
| Tin | 5,500 | 100 | 550,000 |
| Lead | 76,506 | 12 | 918,172 |
| Iron | 1,688,458 | 4 | 6,753,832 |
| Quicksilver | 5,240 | 167 | 875,080 |
| Cinnabar | 7,800 | 150 | 1,170,000 |
| Cobalt | 9,405 | 18½ | 174,178 |
| Antimony | 6,900 | 12 | 82,000 |
| Bismuth | 700 | 36 | 28,200 |
| Manganese | 850 | 10 | 8,500 |
| Arsenic | 226 | 75 | 50,625 |
| Mineral green | 1250 | 55 | 68,475 |
| Salt | 5,928,189 | 3 | 17,784,507 |
| Vitriol | 10,120 | 12 | 121 440 |
| Alum | 8,104 | 15 | 121,560 |
| Coals | 1,177,000 | ¼ | 292,334 |
| Other minerals | ..... | ..... | 8,010,760 |
| | | | Florins 43,859,353 |

The produce of the gold mines of Transylvania is reckoned at from 2000 to 2500 marks, and occasionally 3400 mks. (100 m. = ½ cwt.) Those of Hungary are stated to yield 2000 mks. or 10 cwt. The Austrian provinces (Salzburg) yield 60—90 mks. Hungary and Transylvania produce about 92,000 marks or 460 cwt. of silver; Bohemia 8,870 mks.; Styria, Carinthia, and Gallicia 2000 marks. Rich as this gain may appear, it gives in reality but a faint idea of the inexhaustible wealth of the different mountain chains which traverse the Austrian empire, the mines in which would suffice to supply all Europe if their management were left to the exertions of private individuals. The wretched state of the roads in the most productive mining countries of Hungary and Illyria, and the neglected condition of the rivers, which ought to afford every facility for inland transport, not only render it scarcely worth while to work many of the less valuable metals, but subject these districts occasionally to all the inconveniences of scarcity, while other parts of the same province are literally oppressed with the abundance of the crops.

The crown lands are another and very extensive source of revenue; but we are as little able to state the income they produce, as to give the amount which any one of the taxes annually yields. A mere allusion, however, to these domains suggests a very important question connected with the year 1811, that terrible epoch for the nation, which shook the public credit to its foundation. The measure of depreciating the current coin to one-fifth of its value by an order of council, which threw the trading and industrial classes into indescribable misery, while the landed proprietors remained untouched, was one of those wanton, inconsiderate acts of oppression, which may be explained, but cannot be palliated by supposing the most complete ignorance of all the principles of political economy on the part of those who originated, as well as those who suffered, such a measure. The utmost that could be gained by such a step was the relieving the government from a part of the public debt, and the defrauding the contractors, with whom at the moment negociations were pending. The debt could not at that moment have been a subject of such inextricable difficulty, while the latter gain must at all times have been far too paltry, independently of the moral effects of the measure, for any government to look upon it as an advantage worth obtaining by such means. So great was the panic occasioned by this step, that in a few

days the new issue of bank notes sank twenty-five per cent. in value for circulation, and, as all persons engaged in purchases, and all debtors, seized the opportunity in order to defraud the parties to whom they were indebted, the misery entailed upon thousands of families, which the mere loss reduced to ruin, was aggravated by the circumstance of the gain in such cases being on the side of the improvident, while the careful economist was despoiled of his frugal hoards. If the total gain accruing to the government by this step were revealed, there is no doubt that we should find that it might have been covered by the sale or mortgage of part or the whole of those crown lands, whose existence in the possession of the crown, after the nation had been called upon to make so cruel a sacrifice, loudly accuses the rulers who would not give up this means of influence to secure the welfare of the people.

This step may be said to have given the death-blow to Austrian credit at home, the people not yet having recovered confidence in the government —a fact which has shown itself on many occasions within the last three years, when the near prospect of a breach with France has invariably made the public papers unmarketable at Vienna; and the first declaration of war in Europe will be marked by a fall of from 30 to 40 per cent. in their nominal value. This does not proceed, however, from any want of confidence in the resources of the empire, the wealth of which is well known to its inhabitants, but from the measures and avowed opinions of the principal men at the head of public affairs. It is known that an establishment of the finances upon a sound footing has always been avoided, as rendering imperative a degree of responsibility which the ministers will not submit to, while the annual increase of the taxes and the raising of large loans after so long a continuance of peace show how badly the present system of taxation is working. Upwards of £40,000,000 has been raised since 1816 by way of loan, and some measure of the kind adopted annually shows that the revenues, large as they are acknowledged to be, do not suffice to cover the expenses of the state. A large proportion of this debt is stated to be in the hands of the commissioners of the sinking fund; and perhaps this is the fact, for the credit of Austria has been in so fluctuating a state since 1830, that the price of stocks has only been kept up by the interference of the government, and the occasional purchase of large sums when the market was depressed.*

AUTOMATON, (*a.*) We have spoken briefly in the body of the work of various automata, or pieces of mechanism made to resemble living creatures in appearance and to perform their actions, that have been exhibited, both in ancient and modern times, to the astonishment and delight of the world. A fuller description of one or two of these, from materials now before us, may interest the reader.

One of the most remarkable automatons ever contrived and executed, was the famous chess-player, which challenged and beat some of the best players of that game in every capital city of Europe. Of this most ingenious piece of mechanism many of our readers must have heard, though the explanation of the wonder may not be so familiar to them.

* For the above article, which contains the most recent statistics of the Austrian empire, we are indebted to the Foreign Quarterly Review.

The automaton chess-player was constructed by M. Kempelin, a Hungarian gentleman of education and genius, residing at Presburg, in which city it was first exhibited. It was afterwards brought by the inventor to Vienna and Paris, and in 1783–4, it was exhibited in London and other parts of Britain, where it was visited and examined by many hundred thousand persons. It was subsequently carried over all Europe, and after M. Kempelin's death, was brought a second time to Britain in 1819, to be shown in public anew. During all this time, the secret of the automaton's movements was never publicly discovered, although it had been privately purchased, as we shall see, and though such was the interest excited by it among the learned and the ingenious, that several books were published on the subject.

The automaton, adorned with a splendid turban, and dressed in the rich costume of an Asiatic sultan, sat before a chess-board placed upon a sort of cupboard, three feet high, two feet broad, and four feet long, and moving on castors. The cylinder, levers, and springs necessary for the machine were in the cupboard; and before it was put in motion the inventor took care to open the doors of the cupboard alternately, and to point out that the quantity of clock-work with which it was filled made it impossible to introduce any person into it. As soon as an antagonist presented himself, the exhibitor took up his long iron key, and wound up the machinery with studied gravity, during which the clicking of the wheels was distinctly heard.

The eyes of the automaton were now directed to the board, and, after due meditation, he lifted up his arm, placed it over the piece that he intended to move, grasped it between his fingers, and then put it on the square where it was to remain. If a false move was made, he shook his head discontentedly, and replaced the piece. When the automaton gave check, his lips moved and uttered a hoarse sound resembling *shay*, which served as a notice to his adversary.

Thus nothing which could favour the illusion had been neglected; and though on reflection it appeared certain that the hand of the automaton was guided, the method of the communication remained a mystery. All eyes were turned to Kempelin, and endeavoured to draw from his physiognomy or gestures some hint of the means that he employed—but in vain. Sometimes he turned his back to the table, and sometimes went several steps from it, allowing three or four moves to be played before he returned: the table too might be moved at the will of the spectator, thus rendering all communication with the floor or the next room impossible. The examination which had been allowed of the interior showed that a child or a dwarf could not be concealed in it; besides, supposing that one had been there, how could he, at the bottom of a cupboard, almost hermetically sealed, see a game played on a board placed on the table above?

The mystery was long impenetrable. When at Berlin, Frederick the Great, in a moment of enthusiasm, paid a large sum for the machine and the secret. When the mystery was made known to him, its charm was over, and Frederick, unwilling to make public that he had been duped, ordered the automaton to be thrown into a lumber room in the palace, where it remained for nearly thirty years, buried and forgotten.

When Napoleon was at Berlin, the automaton

was rescued from his tomb, re-assumed his former splendour, and, proud of having triumphed over the conqueror of Austerlitz, continued his travels.

After some years he arrived at the Bavarian court, where the ecstasy which his play never failed to excite was again renewed. Indeed the impression made was so strong, that Prince Eugene could not resist the temptation of becoming the possessor of this masterpiece, and learning the secret which was at the bottom of so many prodigies; his desire was satisfied, and the price of his initiation was fixed at 30,000 francs (£1200).

The moment had arrived when the veil was to be removed, and he was to become acquainted with the invisible genius,—the superior being that hovered over the chess-board. All profane eyes had been banished, and the Prince was alone with the exhibitor. The latter, by way of explanation, opened both the doors of the machine at once;—the clock-work had disappeared, and a real flesh-and-blood chess-player was in its place. He was sitting on a low bench, upon castors, and seemed very ill at ease. We may suppose how the new purchaser was disenchanted on seeing this;—the solution of the problem depended merely on a juggling trick. The cylinder, levers, and clock-work, were very slightly made, and could be removed at pleasure. While the spectator was indulged with a view of the machinery, the doors being opened, not at once, but only in succession, the player concealed himself in the parts not exposed to view. One or two rehearsals served to teach a player this exercise, as well as the method of turning the handle that moves the automaton's arm, of touching the elastic spring that moves its fingers, and of pulling the cord belonging to the bellows that said *shay*. Hence it would appear that this part of the secret was pretty well guessed or known by the author of a pamphlet, entitled 'An Attempt to analyse the Automaton Chess-Player of M. De Kempelin.' London, 1821. 8vo. After describing the manner in which the player may take refuge in one part of the machine while another is exposed to the spectator, he says, 'When the doors in front have been closed, the exhibitor may occupy as much time as he finds necessary in apparently adjusting the machinery at the back, whilst the player is taking the position described in figs. 7 and 8. In this position he will find no difficulty in executing every movement required of the automaton: his head being above the table, he will see the chess-board through the waistcoat as easily as through a veil."

But the ingenious author of this pamphlet, though right in his supposition that the game is played by a person concealed in the machine, is wrong in imagining that he sees the moves of his antagonist. The method by which the player becomes acquainted with the moves made upon the board, shows a singular felicity of mechanical contrivance; but has not yet been made public.

Prince Eugene now found that keeping the automaton was useless, unless he also kept the player; and he therefore allowed the proprietor to carry off the wonder-working Turk, on condition of paying interest for the sum which had been given for the secret.

A pleasant story is told of a panic that once seized the automaton. He had arrived at some town in Germany, where a celebrated conjuror was exhibiting his tricks. The automaton soon eclipsed the juggler; the latter, piqued at his success, went to see him, guessed the secret, and, seconded by an accomplice, began to roar out most lustily, "Fire! Fire!" The spectators ran here, there, and everywhere; the automaton in his fright, upset his antagonist, rolled about in the strangest way, and seemed to have gone mad. Fortunately, the proprietor preserved his presence of mind, and pushed him behind a curtain, where his fears were soon calmed. Thus the juggler was defeated, and the glory of his rival remained untarnished. The automaton has passed several years in North and South America.

Perfect as the chess-player is as a piece of mechanism, it may by many people be considered as inferior to the celebrated *duck* of Vaucanson. This ingenious person, who flourished in France during Louis XV.'s reign, constructed a duck, exactly of the natural size, and scarcely distinguishable from the living animal. It quacked as perfectly as if it had been hatched in a nest; it muddled the water which it lifted with its bill; it ate and drank, and performed all the gestures and movements peculiar to the living animal with wonderful accuracy. When grains of corn were cast before it, it stretched its neck to pick them up, swallowed them, and, what was still more marvellous, digested them by an artificial chemical process in its stomach, and finally discharged them from its bowels in a digested condition. What constituted an additional beauty of this piece of mechanism, was its internal anatomical structure, which in every bone, every cavity, every canal, resembled the real duck. The king and courtiers of France were so much delighted with it, that it was subsequently exhibited on the faith of that success over all Europe, and, as might be expected, the interest which it excited every where was most flattering to its constructor.

The same mechanist exhibited his astonishing powers in the construction of an automaton flute-player, which executed several very difficult pieces of music with great beauty and precision. Considering the influence which is exerted by the mobile character of the human lips and throat in modifying the tones of instrumental music, such a machine as a flute-player could not, it is evident, be constructed without great labour and ingenuity. The operations of this automaton were directed by clock-work, which acted on not less than nine pair of bellows. The air emitted from these by the contracting force of the clock-work, passed from the lips of the figure into the holes of a flute, held, as usual, in the hands. Seven levers directed the motions of the fingers, and regulated the ingress of the air into the flute. Various contrivances, of a delicate kind, modified and counteracted the hissing, &c., which such a machine was liable to. In short, every motion which a flute-player of flesh and blood goes through in the exercise of his art, found a parallel in this machine of M. Vaucanson, and the effect of the whole was surprising in the highest degree, and most honourable to the ingenuity of the mechanist.

In a late number of Galignani's Messenger, the following account is given of an automaton violin-player, made by a monsieur Mareppe, and exhibited before the Royal Conservatory of Paris.

"Our informant, M. Bruyere, who was present, thus describes it:—On entering the saloon, I saw a well-dressed handsome figure of a man, apparently between forty and fifty, standing with a violin in his hand, as if contemplating a piece of music which lay on a desk before him; and had I not

gone to see an automaton, I should have believed the object before me to have been endowed with life and reason, so perfectly natural and easy were the attitudes and expression of countenance of the figure. I had but little time for observation before the orchestra was filled by musicians, and, on the leader taking his seat, the figure instantly raised itself erect, bowed with much elegance two or three times, and then, turning to the leader, nodded, as if to say he was ready, and placed his violin to his shoulder. At the given signal, he raised his bow, and, applying it to the instrument, produced, à la Paganini, one of the most thrilling and extraordinary flourishes I ever heard, in which scarcely a semi-tone within the compass of the instrument was omitted, and this executed with a degree of rapidity and clearness perfectly astonishing. The orchestra then played a short symphony, in which the automaton occasionally joined in beautiful style; he then played a most beautiful fantasia in E natural, with accompaniments, including a movement allegro mollo on the fourth string solo, which was perfectly indescribable. The tones produced were like any thing but a violin, and expressive beyond conception. I felt as if lifted from my seat, and burst into tears, in which predicament I saw most persons in the room. Suddenly he struck into a cadenza, in which the harmonics double and single, arpeggios on the four strings, and saltos for which Paganini was so justly celebrated, were introduced with the greatest effect; and after a close shake of eight bars' duration, commenced the coda, a prestissimo movement played in three parts throughout. This part of the performance was perfectly magical. I have heard the great Italian, I have heard the still greater Norwegian, I have heard the best of music, but I never heard such sounds as then saluted my ear. It commenced *p p p*, rising by a gradual crescendo to a pitch beyond belief; and then by a gradual motendo and colendo died away, leaving the audience absolutely enchanted. Monsieur Marreppe, who is a player of no mean order, then came forward amidst the most deafening acclamations, and stated, that, emulated by the example of Vaucanson's flute-player, he had conceived the project of constructing this figure, which had cost him many years of study and labour before he could bring it to completion. He then showed to the company the interior of the figure, which was completely filled with small cranks, by which the motions are given to the several parts of the automaton at the will of the conductor, who has the whole machine so perfectly under control, that Monsieur Marreppe proposes that the automaton shall perform any piece of music which may be laid before him within a fortnight. He also showed, that, to a certain extent, the figure was self-acting, as, on winding up a string, several of the most beautiful airs were played, among which were 'Nel cor piu,' 'Partant pour la Syrie,' 'Weber's last waltz,' and 'La ci darem la mano,' all with brilliant embellishments. But the *chef d'œuvre* is the manner in which the figure is made to obey the direction of the conductor, whereby it is endowed with a sort of semi-reason."

AYLESBURY; a market-town and parish in the county of Buckingham, the former distant from London thirty-eight miles north-west. The town stands in the rich tract of land called the vale of Aylesbury, which extends from Thame in Oxfordshire to Leighton in Bedfordshire. The houses are chiefly built of brick, the streets are irregular but well paved, and lighted with oil, and the supply of water is good. The county-hall is a handsome brick edifice, erected in 1723, in which the quarter-sessions and Lent assizes are held. The market-house is a modern building, constructed on the model of the Temple of the Winds, at Athens. The principal manufacture is that of lace, and many of the inhabitants are supported by breeding young ducks for the London market, which they contrive to bring forward in the middle of winter, when they are rare, and bear a very high price. A market for corn and provisions, held on Saturday, is well attended. The parish is a prebend of the same name in the cathedral church of Lincoln; the living is a discharged vicarage in the archdeaconry of Buckingham and diocese of Lincoln, valued in the king's books at £24 18s. 1d., and in the patronage of the prebendary of Aylesbury. The church, dedicated to St Mary, is an ancient and interesting structure in the form of a cross, with a low tower rising from the intersection of the nave and transept, which, owing to the elevated situation of the tower, is seen for many miles round. The Methodists, Baptists, Independents, and Society of Friends, have places of worship here. There is a free grammar school here, which was founded and endowed with £8 per annum, by Sir Henry Lee. The endowment was subsequently augmented by a donation of £5000, bequeathed by Henry Phillips, Esq., a native of the town; which has been invested in land producing £237 16s. 7d. per annum; there are one hundred and twenty boys on the foundation, fifteen of whom receive instructions in the classics. In 1718, the schoolhouse, and residences for three masters were erected. There is a Lancasterian school, which was founded by Mr John Hull, of Uxbridge; besides which there are several Sunday schools in connection with the different congregations. A rental of upwards of £300 per annum is yielded by lands given in 1694 by Mr John Bedford, for the support of the poor and repair of the highways. The minor charities are numerous, and by attracting strangers have tended to increase the population. The family of Brudenell Bruce takes the title of marquess from Aylesbury. There were here anciently a nunnery, and two hospitals for lepers, dedicated to St John and St Leonard, which had gone into decay previously to the year 1360. Population of town and parish in 1841, 56,764.

AYLSHAM; a market-town and parish in the county of Norfolk, the former distant from London 118 miles north-east; from Norwich, 13. The town stands on the southern bank of the river Bure, which has been rendered navigable for craft of fourteen tons from hence to Yarmouth. The living is a rectory in the archdeaconry and diocese of Norwich, valued in the king's books at £17 9s. 9d., and in the patronage of the dean and chapter of Norwich. The church, dedicated to St Michael, is a spacious structure in the decorated style of English architecture, consisting of a nave, two aisles, two transepts, a square tower, and a small spire. It contains a curious and richly sculptured font, and some curious ancient ornaments, with a modern one to Humphrey Reptoun, a writer on gardening and architecture who resided in this town. The church was erected in the 14th century by John of Gaunt, duke of Lancaster, the court of whose duchy was held in this town, the land of which and of the parish is chiefly held by

copyhold from the same duchy at this day. This was formerly an important manufacturing town. During the reigns of Edward II. and III. it was celebrated for the manufacture of linen, which was sold under the name of Aylsham web. Subsequently the manufacture of woollen articles gave employment to many of the inhabitants, but since the introduction of machinery, this branch of trade has also fallen into decay. Corn and timber now form the principal articles of trade. There is a free school, originally founded in 1517 by Robert James, mayor of Norwich, and endowed with £10 per annum, which has been recently incorporated with the national school. A fellowship in Corpus Christi college, Cambridge, founded by Archbishop Parker, is restricted to a scholar educated in Aylsham. The Baptists and Methodists have places of worship here. In the neighhourhood there is a spa, the water of which has been found useful in chronic disorders. The principal seat in the neighbourhood is Blickling House, originally built by Sir John Hobart in 1628, and said to have been the birth-place of Anne Boleyn. Population in 1841, 2448.

# B

BACON, Sir Nicholas, the father of the illustrious Lord Bacon, was born at Chislehurst, in Kent, in 1510, and educated at Cambridge. He applied himself to the study of the law, in which he greatly distinguished himself, and was promoted by king Henry VIII. to the office of attorney in the court of wards, in which office he was continued by king Edward VI., and in 1552 he was elected treasurer of Gray's Inn. He was knighted by Queen Elizabeth, and in 1558 he was made lord keeper of the great seal. This important situation he held for twenty years, discharging its duties as an able statesman, profound lawyer, and faithful counsellor. He died on the 26th February, 1578–9, equally lamented by the queen and her subjects. It is narrated that when the queen told him that his house at Redgrave was too little for him, he modestly answered, "No, Madam; but your majesty has made me too great for my house." He was the first lord keeper who ranked as lord chancellor.

BAGDAD (*a.*) The city of Bagdad, in Asiatic Turkey, is unhappily subject to visitations of the plague, but that which afflicted it in 1831 was the most severe on record. About the middle of March in that year, it first made its appearance. The population then somewhat exceeded 80,000. Of this number 7000 perished in the first fortnight; and as this presented a daily average of mortality equal to the *maximum* in plagues considered very bad, it was, not without reason, hoped that the rage of the pestilence would then subside. It had, however, scarcely commenced. At the termination of the period mentioned, carbuncles began to appear in the patients, and from that time the *daily* mortality increased with a rapidity truly frightful, until, towards the end of April, it attained the *maximum*, of little less than 5000; and at the termination of the calamity, it was computed that out of 70,000 persons, (which allows more than 10,000 to have perished from other causes, or to have escaped,) not less than 50,000 persons were destroyed by the plague in the two months of its duration. Although this can only be regarded as an approximation, the desolate state in which the city was left shows that the amount of mortality could not have been much less, but very probably more.

This extent of destruction, which, in proportion to the population, far exceeds that of any other plague of which authentic record remains, is not to be attributed to any peculiar virulence in the pestilential *miasma*, but rather to concurring circumstances, which, in the first instance, precluded the dispersion or escape of the people, and, in the second, obliged them to congregate densely in particular parts of the city. In ordinary circumstances, large numbers of the upper classes would have removed to Bussorah, Mosul, or Damascus, and other towns; and the poor would have dispersed themselves in the open country. But at this time the Arabs, scarcely at any time manageable, were emboldened by the knowledge that Ali Pasha of Aleppo was marching upon Bagdad with a firman from the sultan, empowering him to depose the ruling Pasha, and occupy his place. Various parties therefore fixed themselves in the vicinity of the town, for the express purpose of plundering those who might endeavour to escape from the plague; and, if these were avoided, others lay beyond, who had equally no fear of the Pasha before their eyes, and who, except from such fear, would think no more of plundering a man of all he possessed than, to use their own expression, of peeling an onion. This consideration prevented many from attempting to escape; and many who were hardy enough to make the attempt soon returned, deprived of all they had taken with them, even to the clothes they wore. Few of those who did succeed in getting to some distance from Bagdad without being plundered, had much cause to congratulate themselves on their good fortune. The rivers Euphrates and Tigris are flooded twice in each year; first, in the spring, from the melting of the snows in the mountains of Armenia; and then, in autumn, from the periodical rains. This year the plague had begun to assume its most terrible features, when the rivers overflowed their banks in a manner without recorded or traditional example, laying the country, in the lower part of their course, completely under water. Many of those who were then on their way to other places were drowned; a few found the means of returning to Bagdad; and many who saw the waters gathering around them, and equally precluding their progress and return, were enabled to retreat to some rising grounds, where they established themselves, and waited many

weeks till the subsiding waters allowed them to return.

At Bagdad the waters were for some time excluded by the walls of the town; but, on the night of the 26th of April, a part of the wall on the north-west side of the city was undermined and fell. The waters then rushed in, and overthrew in their career about 7000 houses, burying in the ruins nearly 15,000 persons, many of whom were sick or dying of the plague, besides a large number of unburied dead. Those who escaped from the immediate consequences of this fearful irruption, withdrew to such parts of the city as remained entire or less ruined, where they were received into the houses of their friends, or congregated, sometimes to the number of thirty, in the houses which the owners had forsaken, or which the plague had desolated; and from the daily fall or partial ruin of single houses subsequently, the population was undergoing such a continual process of condensation, until the subsidence of the waters, as completely excluded the city from the benefit which, under ordinary circumstances, would have resulted from the reduced numbers of the population. The inundation is, therefore, to be regarded as the proximate cause of that unexampled amount of destruction which the plague effected. It also resulted from this condensation of the population, and from the deprivation of the usual resources for the disposal of the dead, that the sickening horrors of a plague were accumulated tenfold before the eyes of the survivors. Burial-places in the East are generally without the town. These were, at Bagdad, laid under water, and while the disposition and power lasted to bury the dead at all, every open space—the streets, the yards of mosques and stables, were turned up to furnish graves. In a stable-yard, which the terrace of one house overlooked, nearly a hundred graves were opened and filled in the course of one day and a half. It was a fearful thing to see the uncoffined dead brought in barrows, and on the backs of asses, and laid upon the ground till the graves were ready for them.

At this early period of the plague, the usual custom was generally observed of enfolding the bodies in cotton, like mummies; but when cotton was becoming scarce and dear, the richest natives, in order to secure for themselves some of the honours of the grave, went in person to purchase their own winding-sheets of the only man who then, at his own house, sold the cotton, and who on this occasion made immense profits which he did not live to enjoy. But with the increase of mortality, both the power and inclination to inter the dead diminished. If the means of removal had existed, they would, without doubt, have forsaken their houses, leaving the accumulated dead unburied in them; but this being precluded, the dead bodies were put out into the streets, where they were greedily devoured by the lean and ravenous dogs which swarm in the cities of the East. He did much, then, who took the dead of his household to the river and threw them in.

BAILLIE, Evan, Esq., formerly M. P. for Bristol, was a native of Invernesshire. He was one of the most eminent of the merchants of Bristol; and was chosen member, without a contest, at the general election of 1802, re-elected in 1806 and 1807, and retired in 1812. After devoting his energies during a long series of years to the affairs of the extensive West India establishment of which he was the founder, and to the service of his fellow-citizens, upon principles of integrity and independence, he exchanged the turmoil of civic life for the retirement of his native country, where he passed the evening of his days. He died at Dochfour near Inverness, June 28, 1835, aged ninety-three.

His son, the present James Evan Baillie, Esq., has also represented Bristol in three parliaments, having been first chosen in 1830.

BAIROUT, anciently Berytus, a seaport of Syria, situated in long. 35° 32′ E. lat. 33° 45′ N. The harbour is now choked up with sand and rubbish, but there still remains a pier to which boats can approach sufficiently for discharging goods. Large vessels anchor at a distance in the roadstead. The town itself is an irregular square, open to the sea, and towards the land surrounded by a wall, with a few round towers of little strength. It contains three mosques and four Christian churches. The dwelling-houses are spacious, and the bazars amply furnished with merchandise. The commerce of Bairout exceeds that of any other port in Syria. It is the maritime emporium of Damascus and of the surrounding country. British manufactures are imported to a considerable extent, and in return, cotton, corn, raw silk, wine and oil received. The ancient Berytus contained a public school of jurisprudence which long enjoyed a high degree of reputation. But the town suffered severely from successive shocks of earthquake, until, in 554, it was totally destroyed. After a long interval, the modern town was founded near the ancient site, and was possessed by the emirs as their capital and only sea-port until they were expelled by Djezzar, pasha of Acre. The population of the place is now estimated at about 7000.

BAKEWELL; a parish and market-town in the county of Derby. The parish includes the chapelries of Ashford, Baslow, Beeley, Buxton, Chelmerton, Great Longstone with Holme, Mony-Ash, Sheldon, and Taddington with Priestcliffe, the townships of Bakewell, Blackwell, Brushfield, Bubnell, Flagg, Froggatt, Harthill, Overhaddon, Rowland, Great Rowsley, and part of Aport, and part of Wardlow, and the hamlets of Calver, Curhar, Hassop, and Little Longstone. It is upwards of twenty miles in length, and eight in breadth. The living is a discharged vicarage, a peculiar of Lichfield, valued in the king's books at £40, and in the patronage of the dean and chapter of Lichfield. The church, dedicated to All Saints, is an ancient and spacious cruciform structure, partly in the Norman and partly in the early English style of architecture, having at the western entrance a highly ornamented Norman arch, and an octagonal tower, with a lofty spire, springing from the intersection. Within is a stone font of great antiquity and several altar tombs of alabaster supporting recumbent figures. In the churchyard stands an ancient cross, decorated with rude sculpture, but much mutilated. There are mines of coal, lead, and zinc, and quarries of stone and marble, which give employment to many of the inhabitants. The town is situated on the river Wye near its confluence with the Derwent. It stands in a beautiful and picturesque vale between Matlock and Buxton, the air of which is remarkably salubrious, and has an ample supply of water from numerous springs. The name is derived from the Saxon *Baderanwylla*, or *Badde cum Well*, of which it is a contraction and corruption. The original name was derived from the circumstance of there being

a mineral well here, the waters of which were used to supply baths, which were in repute prior to the year 924. At this time the town was founded by Edward the Elder, though, from various remains discovered at different periods, it has been supposed that this was anciently a Roman station. At the Conquest the manor was granted to the family of Peveril, from whom it passed to the Gernons, who sold it in the reign of Henry VII. to the Vernons, from whom it descended to its present possessors the dukes of Rutland. The water is chalybeate, and a fine set of baths have been recently established. The principal bath is constantly supplied by a stream of fresh water, which has the temperature of 60°, and emits a considerable quantity of carbonic acid gas. There are also warm and shower baths with suitable accommodation. In the same establishment are a museum and news-room. The inhabitants are partly employed in the neighbouring quarries of black and gray marble, and partly in a cotton mill. Population of town and parish in 1831, 11,401; and in 1841, 10,363.

BAKU; the little promontory of Absheron on the Caspian Sea is one of the most singular regions in the world. It is situated in Georgia, and was once considered a part of Asia; but since it has become a province of Russia, it has been reckoned as forming a portion of Europe. The surface of the promontory is barren, almost destitute of water, and utterly bare of trees. Its soil is saturated with naphtha, a very inflammable bituminous oil, which in some parts rises to the surface of the earth spontaneously, and may be found by digging almost every where. In many places enormous quantities of gas, similar in nature to our coal or oil gas, issue from orifices in the earth; this gas the inhabitants employ to light their houses, by conducting it through tubes, similar in principle to our gas-pipes, though more clumsy in construction. They use it also as fuel to dress their food, to warm their dwellings, and for many other purposes. The centre of action of this fiery matter is near the town of Baku, the chief place in the territory.

The ancient Persians were worshippers of fire: they adored the sun as its source, and in his absence they kept up perpetual fires as his representative. The advance of the Mahommedan religion extinguished, in a great measure, the faith of the Fire-worshippers; but some remains of the ancient believers are still found scattered in Persia, and many of their body have been long settled in India, particularly at Bombay, where they constitute a very respectable and influential portion of the population. The perpetual fire of Baku would naturally be an object of attraction to these people; and we accordingly find that they have, from a remote period, had an establishment there. They have enclosed with a high wall a spot of ground, from which a vast quantity of gas issues, which they always keep burning. This place has been described by several travellers, the most recent of whom, a Russian, whose journal was published in 1833, arrived on the spot by night. "We saw the flame," he says, "at a considerable distance before our arrival. It was a singular spectacle; four principal jets of flame were first visible, and as we got nearer, a considerable number of smaller ones began to show themselves springing from the ground. The four jets rose to a great height, and illuminated all the surrounding country, which is barren and desert. At last we saw a high wall of white stone, above which rose four great tubes like chimneys; from these tubes issued the columns of flame we had first seen. We thought ourselves in the neighbourhood of a palace of fairies."

The Fire-worshippers at Baku generally reside at that unhealthy spot a longer or shorter time, according to the fervour of their faith. The shortest residence is five years; many stay there eight; and a very few, who are considered in the light of saints, remain there until death. As the Russian writer calls them Hindoos, they are probably all from India. They live solely on vegetables, cultivated by their own hands, and each man dresses and eats his food alone in his cell. Their maintenance is derived chiefly from the charity of their fellow-worshippers. The owners of vessels navigating the Caspian Sea also frequently send them considerable presents, as a sort of payment for the benefit received from the fire maintained in the four lofty chimneys before-mentioned, which constitutes an excellent lighthouse.

Our traveller describes the appearance of the interior of the inclosure as very imposing. "We were struck with astonishment," he says, "at the sight before us. We found ourselves in a vast square perfectly light, and in the midst we saw a building, from which issued four large and lofty tubes vomiting flame. The light from this fire is not less surprising to strangers than it is dazzling. The cells of the Hindoos are placed all round the walls. . . . . The Hindoos, with no other covering than a girdle and a turban, came out of their cells. The dark colour of their skin, their loose hair (for as many of them had no turban, it hung at full length in disorder), and the leanness of their bodies, which showed nothing but bones, produced on us very singular sensations. The first who accosted us introduced us into his cell: the only furniture was a miserable carpet and two pitchers; but a beautiful rose-bush stood outside the door. . . . . The cells were mostly small; flames were spouting out in nearly all of them, either directly from holes in the floor, or from clay tubes driven into the ground, which answer the purpose of candles."

In the midst of the enclosure is the place where these people burn their dead. It is a cave dug in the earth, about six feet square and three deep, and is covered with broad flat stones. This vault, like every other opening made in the ground, is always filled with gas. When a Fire-worshipper dies, the survivors smear his body with butter, and place it over the vault: they then set fire to the gas, which comes through the interstices between the stones, and the body is thus consumed. They afterwards carefully gather up all the ashes which have fallen through into the vault, and throw them to the winds. Thus ends the ceremony.

The gas is evidently of a similar nature to what we use, though, as it is said to be without smell, and to have no effect on the breath, it is probably purer than that which our establishments produce. Its flame is of a yellowish white, and very brilliant. This shows that it cannot be pure hydrogen, which burns with a faint blue flame. The heat it gives out in burning is very great, sufficient to calcine lime; and it is largely used for this purpose by the people of the country. When mixed with common air, it becomes explosive. The first discovery of this property was unlucky for the poor Fire

worshippers; it was made by one of them who happened to raise his torch near the ceiling of his cell, where the gas rises in consequence of its levity. It exploded, a large portion of the building was thrown to the ground, and several persons were severely wounded. Since that time they have been very cautious about lifting up a light in their cells, and they ran away terribly alarmed at seeing the Russian traveller do so. But they are very willing to perform the experiment at any time for the amusement of strangers, at some distance from their dwellings. The place they choose for this object is the well whence they get water. They usually keep this well open, to allow the gas to escape; but when they cover it, a sufficient quantity is evolved in half an hour to produce an explosive mixture with the air that was previously in it. When this is effected, a person takes off the cover of the well and throws into it a handful of lighted straw. The explosion which follows is said to be terrific, which may be easily imagined, the well being 100 feet deep.

Many theories have been formed to account for the vast development of gas at Baku: the most probable seems to be, that the naphtha which abounds in and beneath the soil is decomposed by some internal fire. That there is such a fire at no great distance from the surface, there can be no question. There are a great many hot springs, and in some crevices of the calcareous rock near the perpetual fire the heat felt is so great that it is impossible to keep the hand there. The whole territory, as well as some of the islands in the neighbourhood, are constantly subject to mud volcanoes. On one of those islands, named Svinoi Ostrov (Isle of Pigs), Mr Vatsenko, Russian consul at the court of Persia, was wrecked in 1826. The island, he says, is quite covered with volcanoes of mud; they are little heaps or swellings in the tenacious soil, which rise gradually with a peculiar noise to the height of two or three feet; they then burst like bubbles, water is thrown out, and their sides fall in. Outside they look like moist clay, and inside they have the appearance of burnt bricks: naphtha begins to flow out of the opening as soon as the water has ceased spouting. When one heap has disappeared, another rises near it, but not in the same place, and in this manner the whole island is covered; it has the appearance of an immense field grubbed up by pigs, which has induced the Russians to give it the name it bears. The whole of the surface is soft, and imbibes water like a sponge; after a shower of rain, it is a complete marsh, which will not bear a foot upon it.

The volcanoes of the continent are much larger, and more worthy the name than those little elevations on Svinoi Ostrov. They have been frequently described, and Kœmpfer has given a strange drawing of one in his "Amœnitates Exoticæ." They have occasionally thrown out large stones and flame as well as water, which may account for Massudi's description.

The chief riches of the country consist in its naphtha. This useful bituminous oil is of two sorts, black and white. The latter is the most valuable, and it is also much rarer than the other; it is found only at one place, about a mile from the village of Sarakhan, where it is gathered in sixteen wells or pits. Of the black sort the number of wells worked in 1833 was 109. Notwithstanding its name, this is by no means all black: it varies in quality from a coarse pitchy substance, which can be used for little better than caulking ships, to a clear greenish oil, which serves admirably for lamps. The earth and sand in the neighbourhood of the wells is so thoroughly impregnated with naphtha, that it forms an excellent fuel, and is used exactly like our coal: when it is found in large slabs, it is used like slates or tiles for roofing houses, for which purpose it is admirably fitted by its toughness and impermeability.

The naphtha is drawn from the wells, which vary from one to fifteen fathoms in depth, by means of buckets and windlasses, which are moved by men or horses. It is almost invariably found mingled with water, from which it is separated by being thrown into large ditches constructed near the wells, in which it is allowed to stand until the water by its superior gravity falls to the bottom. The naphtha is then gathered up in flat wooden scoops, and poured into large sheepskin bottles, which are then deposited in cellars well lined with cement, until they are wanted for exportation or home consumption. The production of black naphtha is computed to be about nine millions of pounds per annum, while that of the white sort is under thirty thousand pounds.

BALLINA; a seaport of Ireland, in the county of Mayo, and province of Connaught, situated on the river Moy, 125 miles W. N. W. from Dublin. The river runs through the town, and here separates the counties of Sligo and Mayo. The part of the town on the Sligo, or right bank of the river, is called Ardnaree, but is generally included under Ballina. In point of trade and population, it is the third town in Mayo. Value of exports in 1835, £70,568; of imports, £13,532. Population 7010. In 1798, General Humbert, who landed with the French troops in Ireland, took possession of this place.

BALLYMENA; a town of Ireland, the second in the county of Antrim in point of population and trade, is situated on the small river Braid, which unites with the Maine water two miles below the town; distant 24¾ miles N. W. from Belfast and 105 N. from Dublin. The linen trade is carried on extensively here; brown linen sales alone averaging £70,000 annually. In the vicinity of the town are a variety of bleach-greens, at each of which, on an average, 15,000 pieces are annually bleached. At the weekly markets, much business is done in linen, corn, &c. The linen-market is on Saturday, and there are two weekly markets for grain, pork, and other provisions, great quantities of which are bought, chiefly for exportation. Numbers of horses, cattle, and pigs, are also disposed of on the market-days. Altogether, the place is thriving, and the houses are generally commodious and well-built. Population, 5549.

BALLYSHANNON; a town of Ireland, in the county of Donegal, is situated at the mouth of the river Erne, distant from Dublin 102 miles N. W. The Erne, which is here crossed by a bridge of fourteen arches, divides the town into two parts, that on the south side being the suburbs and called the Purt. The town is within four miles of Lough Erne, which embraces an inland navigation of more than fifty miles. The commerce on the river Erne has been impeded by barriers of rock, and plans have been proposed for opening a communication with the Lough, either by a canal or a railroad, to avoid the rapids on the river. A distillery and a brewery are carried on here on a large scale; the salmon fishery is also extensive. The

principal streets are very steep, and there is nothing remarkable in the public buildings. Population in 1831, 3775, of which 1390 were in the Purt or suburbs; total population in 1841, 3513.

BALSA. "Balsa," which in Spanish nautical language means float or raft, is the name bestowed on a contrivance for landing passengers with safety through a heavy turf. It is chiefly employed on the coasts of South America, both East and West, and exhibits a remarkable instance of the ingenuity of the human mind in overcoming those obstacles which nature has raised to the prosecution of its pursuits. It is formed of two seal skins sewed up so as to form large bags from seven to nine feet in length; these, being covered with a bituminous substance so as to be perfectly air-tight, are inflated by flexible tubes and secured by ligatures; the pipe is of sufficient length to reach the mouth of the conductor of this frail bark, who is thus enabled occasionally to replenish the bladders with air, should any have escaped. The two are securely fastened together at one end, which forms the prow of the vessel; the other ends are spread about four feet apart by a small plank, and the raft completed with small sticks covered over with matting. The manager of the balsa sits well forward, with his passengers or goods close behind him, and armed with a double-bladed paddle approaches the back of the surf, waiting for the highest wave, and contrives to keep his balsa on the top of it with her bow towards the shore till she is thrown up on the beach to the very extent that the surf reaches, and the man immediately jumps off to secure his balsa from returning with the sea, when the passengers land without wetting the soles of their shoes. The balsa will easily carry three passengers besides the person who guides it, and is employed in landing the cargoes from merchant vessels where the violence of the surf, particularly on the shores of the Pacific, prevents the possibility of European boats passing through it without great danger. Along the coast of Peru, which is almost entirely devoid of harbours, it is the only vessel used for these purposes, and by such frail means large bags of dollars and doubloons, and bars of silver and gold, are shipped off, without the least apprehension of their safe conveyance. There is another balsa, more simple and more frail, used in crossing rivers, an account of which is thus given by Mr Temple in his entertaining "Travels in Peru:"—"Take a dried bullock's hide, pinch up each of the four corners, put a stitch with a thorn to keep those corners together, and your boat is made. For use, place it upon the water bottom downwards, then put one foot immediately in the centre, and let the other follow with the most delicate caution; you are now to shrink downwards, contracting your body precisely in the manner in which, probably, in your childhood, you have *pressed a friar into a snuff-box*. When crouched down in the bottom, sundry articles are handed in and ingeniously deposited round you, until the balsa sinks to about an inch or an inch and a half; it is then considered sufficiently laden. A naked *peone*, (guide) now plunges into the stream, and, taking hold of one corner of the balsa, a peone on the shore imparts a gentle impulse to your tottering bark, while the person in the water, keeping hold of the corner with one hand, strikes out with the other, and swims away with you to the opposite bank."

BAMBROUGH, or BAMBOROUGH, the name of a ward, parish, and village, in the county of Northumberland. The ward is about seventeen miles in length, and eight in breadth. The parish comprises the chapelries of Beadnell and Lucker, and the townships of Adderstone, Bambrough, Bambrough-Castle, Bradford, Budle, Burton, Elford, Fleetham, Glororum, Hoppen, Mouson, Newham, Newstead, Outchester, Ratchwood, Shoston, Spindlestone, North Sunderland, Swinhoe, Tuggal, Warenton, and Warnford. Population of parish in 1831, 3949. The village was anciently a royal borough and an important market-town, and in the twenty-third of Edward I. returned two members to parliament. It was originally called Bebbunbury, and gave name to an extensive district in the neighbourhood called Bambroughshire, possessed of certain privileges now obsolete. Population of ward in 1841, 5931; parish, 4237; town, 375.

BAMBROUGH or BAMBOROUGH-CASTLE; a township in the above parish. The name is derived from its vicinity to the celebrated castle of Bambrough, which stands on a high and rugged triangular rock of basalt, projecting into the sea, and accessible only from the south-east side. It rises 150 feet above the water-mark. It is said to have been erected about the middle of the sixth century, by Ida, the first Anglo-Saxon king of Northumberland. The following account of the castle is from Pennant's Scotland. "This castle and the manor belonging to it, was once the property of the Fosters; but, on the forfeiture of Thomas Foster, Esq., in 1715, for having joined the Pretender, it was purchased by his uncle Lord Crewe, bishop of Durham, and, with other considerable estates, left vested in trustees, to be applied to unconfined charitable uses. Three of these trustees are a majority; one of them makes the place his residence, and blesses the coast by his judicious and humane application of the prelate's generous bequest. He has repaired and rendered habitable the great Norman square tower; the part reserved for himself and his family is a large hall and a few smaller apartments; but the rest of the spacious edifice is allotted for purposes which make the heart to glow with joy when thought of. The upper part is an ample granary; from whence corn is dispensed to the poor without distinction, even in the dearest time, at the rate of 4s. a bushel; and the distressed for many miles around, often experience the conveniency of this benefaction. Other apartments are fitted up for the reception of shipwrecked sailors; and bedding is provided for thirty, should such a number happen to be cast on shore at the same time. A constant patrole is kept every stormy night along this tempestuous coast, for above eight miles, the length of the manor, by which means numbers of lives have been preserved. Many poor wretches are often found on the shore in a state of insensibility, but by timely relief, are soon brought to themselves. It often happens that ships strike on the rocks in such a manner as to be capable of relief, in case numbers of people could be suddenly assembled: for that purpose a cannon is fixed on the top of the tower, which is fired once, if the accident happens in such a quarter; twice, if in another; and three times if in such a place. By these signals the country people are directed to the spot they are to fly to, and by this means, frequently preserve not only the crew, but even the vessel; for machines of different kinds are always in readiness to heave ships out of their perilous

situation. In a word, all the schemes of this trustee have a humane and useful tendency."

BANBRIDGE; a thriving little town in the county of Down, Ireland, situated on the river Bann, ten miles N. N. E. from Newry, and sixty miles N. from Dublin. It is only of late years that it has risen to commercial importance as the head of the principal district of the linen manufacture. The town is neat and well-arranged, and in consequence of regular employment in the various mills and bleaching greens around, the inhabitants are comfortable. The town-house, a handsome building, was built in 1831 by the Marquis of Downshire, the principal proprietor of the place. Population in 1841, 3324.

BANGALORE; a fortified town in Hindostan, founded by Hyder, and rendered by him a place of considerable commerce, chiefly in the export of betel, pepper, and sandal-wood. The gardens here of Hyder and Tippoo have been laid out with great care. They are divided into square plots, each of which, according to the Mussulman fashion, has some plant or flower allotted to it, with which it is exclusively filled. Owing to the height of the ground, European fruits and flowers may be reared. Bangalore was stormed by the British troops under Cornwallis, and abandoned to plunder. It is distant from Seringapatam seventy-four miles, and from Madras 215.

BANGKOK; the capital of the kingdom of Siam, is situated on the river Menam, twenty miles from the sea, in lat. 13° 40′ N., long. 101° 10′ E. The Menam flows into the Gulf of Siam, and there is a bar at its mouth where the highest water does not exceed fourteen feet: in other respects the river is navigable for vessels of heavy burthen. The city extends along the banks of the Menam about two and a half miles, and the river itself is peopled by numbers of floating houses or stores. The surrounding country is intersected with tributary streams and canals, so that almost all intercourse with Bangkok is by water. The commeree here is chiefly with China and the countries of the Malay archipelago. It consists in an interchange of all sorts of commodities. The population of Bangkok is estimated at 50 or 60,000 inhabitants, half of whom are Chinese settlers.

BANGOR, a town of Ireland, in the county of Down, situated on the southside of Carrickfergus bay, eleven and a half miles N. E. by E. from Belfast, and ninety-one and a half N. by E. from Dublin. The place seems to have been granted by James the First to Sir James Hamilton, who established a colony from Ayrshire here. The cotton manufacture is carried on to a considerable extent both in the town and neighbourhood; a little also is done in the linen trade and in the export of provisions. Population in 1841: of town, 3116; of parish of Bangor, including town, 10,060. Close to the town is Bangor Castle, the seat of Viscount Bangor, the proprietor of the town.

BANKES, Henry, Esq., of Kingston Hall, Dorsetshire; a trustee of the British Museum; was educated at Westminster, and Trinity College, Cambridge, where he graduated B.A. 1778; M.A. 1781. He entered parliament in 1780 as one of the representatives of the borough of Corfe Castle; and was for many years an active member, generally supporting Mr Pitt. He continued to sit in the house by virtue of his family borough, until, in 1826, he was elected for the county of Dorset. At the general election of the same year, he was re-chosen; but at that of 1830, after a severe struggle, he was defeated. Mr Bankes was an accomplished scholar, intimately acquainted with ancient and modern literature, and of a refined and acknowledged taste in the arts; accomplishments that enabled him peculiarly to grace his duties as one of the most active and zealous trustees of the British Museum, of which he was generally regarded as the organ and advocate in the House of Commons. His public life was marked by firmness in principle, a peculiar disinterestedness, and undeviating adherence to conscientiously formed opinions. He was the author of "The Civil and Constitutional History of Rome, from the Foundation to the Age of Augustus," published in 1818, in two volumes 8vo.

Mr Bankes married, in 1784, Frances, daughter of William Woodley, Esq., Governor of the Leeward Islands, by whom he had four sons and two daughters. He died Dec. 17, 1834.

BANNATYNE, Sir William Macleod, one of the senators of the college of justice in Scotland, was descended from an ancient and honourable family, and born Jan. 26, 1743, O. S. Having enjoyed and profited by the advantage of a liberal education, he gave early indications of future eminence. He was admitted advocate Jan. 22, 1765, and at the bar he deservedly acquired the character of a sound and able lawyer. He was the intimate friend and companion of Blair, Mackenzie, Cullen, Erskine, Abercromby, and Craig; and one of the contributors to the Mirror and Lounger. His accomplishments as a gentleman, and his attainments in general knowledge and belles lettres, were such as to excite an opinion that, had he devoted his talents exclusively to literary pursuits, he would have arrived at no ordinary degree of eminence. He was the last survivor of that phalanx of genius which shed so brilliant a lustre on the periodical literature of Scotland half a century ago. He was also one of the original founders and promoters of the Highland Society of Scotland, a national institution which has eminently and essentially contributed to the internal improvement of the country.

He was promoted to the bench on the death of Lord Swinton, and took his seat as Lord Bannatyne, May 16, 1799; and his judicial career for twenty-four years reflects high honour on his memory. He resigned in the year 1823, and was succeeded by the late Lord Eldin. His death took place at Whiteford-House in the county of Ayr, Nov. 30, 1833.

BANNISTER, John, an eminent comedian, was the son of Charles Bannister, who was celebrated as a vocalist, actor, and wit, and was born in the year 1758. Early in life, he studied painting, with the wish to follow it as a profession, but he soon abandoned it for the stage, where he distinguished himself for many years in a variety of characters chiefly belonging to the comedy and tragedy of ordinary life. His acting combined much eccentricity, with exceeding jollity—and with the greatest humour he could blend the deepest pathos. "He was," says a critic, "the last actor who we remember enjoying a kind of personal feeling with his auditors without resorting to buffoonery. It has been said of some comic actor, that immediately on his *entrée* he shook hands with every spectator from the first seat in the pit to the last of the gallery. But Bannister created a different feeling; that sort of feeling that is created when a gentleman of approved worth comes into a circle of society. When he had to deliver a good

sentiment, the spectators felt as if they knew it was the natural impulse of the mind; and they felt in all cases of emergency, not only for the character, but for honest Jack Bannister."

Charles Lamb, speaking of him and Suett, says, "Jack Bannister and he had the fortune to be more of personal favourites with the town than any other actors before or after. The difference, I take it, was this: Jack was more *beloved* for his sweet, good-natured, moral pretensions: Dicky was more *liked* for his sweet, good-natured, no pretensions at all. Your whole conscience stirred with Bannister's performance of *Walter*, in the 'Children in the Wood'—but Dicky seemed like a thing, as Shakespeare says of Love, 'too young to know what conscience is.'"

When Mr Kemble resigned the management in 1802–3, Mr Bannister succeeded to it; but he retained it for only one season.

On the 1st of June, 1815, having been long subject to periodical visitations of the gout, he determined to retire from the stage, on which occasion, after performing *Echo* (in "The World,") and the favourite part of *Walter*, in the Children in the Wood, he delivered the following address:—"Ladies and Gentlemen,—Seven and thirty years have elapsed since I appeared before you, my kind benefactors; and I feel this instant of separation is much more awful to me than the youthful moments when I first threw myself upon your indulgence. During my strenuous exertions to obtain your favour, how much have those exertions been stimulated and rewarded by the public! And one vanity of my heart, which it will ever be impossible for me to suppress, must be the constant recollection of the days in which you fostered me in my boyhood, encouraged me progressively on the stage, and, after a long and continued series of service, thus cheer me at the conclusion of my professional labours. Considerations of health warn me to retire;—your patronage has given me the means of retiring with comfort. What thanks can I sufficiently return for that comfort which you have enabled me to obtain?—This moment of quitting you nearly overcomes me—at a time when respect and gratitude call upon me to express my feelings with more eloquence than I could ever boast, those very feelings deprive me of half the humble powers I may possess upon ordinary occasions. Farewell, my kind, my dear benefactors."

Michael Kelly, in his *Reminiscences*, says that "no performer ever quitted the stage more deservedly respected or regretted."

A few years previous to Mr Bannister's retirement from the stage he gave an entertainment at Freemason's Hall, and afterwards throughout the provinces, with immense success, called "Bannister's Budget," the happy precursor of the many "At Homes," since so popular, from the lamented Mathews. He was also for some years the master of the Drury Lane Theatrical Fund, which he resigned in favour of Mr Kean.

In private life, he lived in the enjoyment of an extensive circle of friends of the highest character and respectability, by whom he was cherished and beloved; and until a very few months of his decease, excepting only the occasional visitations of the gout, enjoyed a green old age, and in the society of his friends "fought his battles o'er again" with a vigour and effect which never tired them or himself. He died on the 8th Nov. 1836, leaving a wife and family in good circumstances.

BANTAM; a town of Java, capital of a district of the same name, is situated in long. 106° 3′ E., lat. 6° 4′ S., near the mouth of a river which falls into the Bay of Bantam. It was once a flourishing place, but is now almost deserted, in consequence of its unhealthy situation, and the transference of the trade to Batavia. Before the Dutch conquest, the province of Bantam was an important state, its sovereign extending his sway over Borneo and Sumatra. The *Bay of Bantam* is gradually becoming inaccessible to vessels of any considerable burthen, from the daily accumulation of earth washed into it from the mountains, as well as from the growth of coral shoals.

BANTRY BAY; a bay on the north-west coast of Ireland, in the county of Cork, long. 9° 24′ to 9° 45′ E., lat. 51° 30′ to 51° 40′ N. It is in length about twenty-five miles and in breadth, including the islands which face it, from six to eight. Its depth of water is between ten and fourteen fathoms. It is surrounded by high mountains, and indented by creeks and inlets. The islands are Bear, Whiddy, Chapel, Horse, Hoy, and Rabbit, the four last being very small. Bear, lying near the western shore, forms the capacious and sheltered harbour of Bearhaven. Its length is about six miles, and its surface rocky. Whiddy lies near the northern extremity, and contains the forts erected for the protection of the Bay. It is about three miles in length, and from one to a quarter in breadth. Its surface is fertile, and it maintains about 450 inhabitants. The *town of Bantry* is situated at the head of the Bay, distant from Cork 47½ miles W. S. W.; from Dublin 173 S. W. The harbour is commodious, but, with the exception of the fishery and the export of corn and other provisions, little trade is carried on. Population, in 1841, 4082.

BARCLAY, John, M. D., an eminent anatomist, was a native of Perthshire, where he was born in 1760. He first studied at St Andrews for the church, and was licensed as a preacher; but having repaired to Edinburgh in 1789, he gave his attention to the study of medicine, became assistant to Mr John Bell, and took the degree of doctor of physic in 1796. In the following year, he became lecturer on anatomy at Edinburgh, and until a short period before his death continued his courses of lectures every year with the most assiduous devotion to the instruction of his numerous pupils. In 1803, he attempted to reform the language of anatomy, by the publication of a Nomenclature, which, though not adopted by the profession, was generally acknowledged to display much talent and learning. In 1808, he published a Treatise on the Muscular Motions of the Human Body, and in 1812, his description of the arteries of the Human Body, both publications displaying much acute observation and research. His last publication was an Inquiry into the Opinions, ancient or modern, concerning Life and Organization. He died at Edinburgh in 1826. After his death, his introductory Lectures, containing a valuable abridgment of the History of Anatomy, were published.

BARKER, E. H.; an eminent classical scholar, was the son of a vicar of Beverley, in Yorkshire. He was educated at Trinity College, Cambridge, and early became acquainted with Dr Parr, with whom he was induced to reside for several years. He afterwards married, and settled at Thetford in Norfolk, where, for nearly twenty-five years, he devoted himself to classical litera-

ture. During that time he edited a new edition of Stephens's Thesaurus, with notes, and published a volume of Classical Recreations, besides several of the orations of Cicero: he also contributed many papers to the Classical Journal and the Museum Criticum. For the last few years of his life, he resided chiefly in London, employed in literary avocations. Besides the above works, he published an Inquiry into the Authorship of Junius's Letters, an edition of Anthon's Lempriere's Classical Dictionary, Noah Webster's English Dictionary, a translation of Julius Silig's Dictionary of the Artists of Antiquity, and two volumes of 'Parriana,' containing notices of Dr Parr and his contemporaries. His death took place in March, 1839. His disposition was amiable, his manners simple, and he enjoyed the friendship of many distinguished scholars of the day.

BARKING; the name of a parish and town in the county of Essex, the latter situated on the small river Roding, about two miles above its junction with the Thames, and seven miles E. N. E. from London. The inhabitants of the town are chiefly fishermen, or persons engaged in the conveyance of coal and timber from the Thames. They send vessels to the coasts of Scotland and Holland, and supply the London market. At Barking creek, which is navigable to Ilford, there is a convenient wharf which facilitates the operations of trade in a great degree. The inhabitants of the parish are chiefly employed in agriculture, and raise many vegetables, especially potatoes, for the London market. Much of the fertility of the soil is due to the large quantity of manure obtained from the Thames and the Roding; but the air is deemed unhealthy, and intermitting fevers are not unfrequent. A market is held on Saturday, and fairs are held on September 14th for toys, and October 22d for horses. Population of both town and parish in 1831, 8036; in 1841, 8718.

BARNARD-CASTLE; a market-town and chapelry in the county of Durham, 244 miles N. N. W. from London, and 26 S. W. from Durham. It is situated on the southern acclivity of an eminence, rising with a steep ascent from the river Tees; and owes its origin to Bernard Baliol, great-grandfather to John Baliol, king of Scotland, who erected a formidable castle, on the summit of a rock, on the west side of the town. The ruins of this fortress, including a round tower of great magnitude, are still to be seen; the walls enclose a very considerable area, of an irregular figure, and are mantled with ivy. Richard, duke of Gloucester, afterwards king of England, resided here for some time, and is said to have added considerably to its extent. In the reign of Elizabeth, it belonged to the earl of Westmoreland; and during his rebellion, it was seized and garrisoned for the queen by Sir George Bowes, Streatham. It now came into the hands of the crown, and was subsequently purchased, along with the houses, parish-lands and privileges, by an ancestor of the marquis of Cleveland, to whom they at present belong. The remains are interesting, and cover a space of more than seven acres of land. A delightful view of the Tees, over which is a bridge of two arches (erected in 1596), presents itself from the castle. The principal street of the town is spacious, and nearly a mile in length; the houses, mostly built of white stone, have a neat appearance, and some of them are handsome. The manufacture of carpets, which has progressively increased to a prosperous extent, is the principal one here; but there are water mills upon the Tees for the spinning of thread. The chapel, dedicated to St Mary, is not remarkable for any thing but its antiquity; it is a spacious cruciform edifice, with a square embattled tower rising from the centre: the living, a perpetual curacy, is in the gift of the vicar of Gainford. The other places of worship are for Wesleyan and Primitive Methodists, and Independents. A mechanics' institute (with library attached), a savings' bank, and a book society, flourish in this town. Raby Castle, and Rokeby Hall are seats of distinction in this neighbourhood. The market day is Wednesday. Population in 1841, 4452.

BARNSLEY OR BLACK BARNSLEY (supposed a corruption of Bleak Barnsley); a market-town and chapelry in the west riding of the county of York, is situated on the side of a hill, distant from York twenty-nine miles S. W., from London 171 N. N. W. The inhabitants were formerly much employed in wire-drawing; and, though this branch of trade has fallen into decay, they are still considered to supply the best wire for the manufacture of needles. There are two extensive iron-founderies and a glass-work. The spinning of yarn employs many people, as does also the weaving of linen, which once employed several thousand looms, but is now beginning to relax. Coal is found in abundance in the neighbourhood, as also freestone and grindstone. The trade of the place has been greatly increased in consequence of the extension of the canal navigation, which connects the town with Wakefield. There is a large market every Wednesday for cattle and corn. There is a free grammar school here, founded and endowed in 1665, by Mr Thomas Keresforth. There is also a national school which is supported by subscription. In 1711, a parcel of land was bequeathed by George Ellis, the produce of which is applied to the education of twenty boys and girls, and to the apprenticing of a few of them. Barnsley also possesses a subscription library established in 1808, and a philosophical society established in 1828. At the distance of about a mile from the town are the remains of the Cluniac priory of Monk Bretton, founded in the 3d of Henry II., by Adam Fitz-Swain. Population in 1811, 5464; in 1821, 8284; in 1831, 10,330; and in 1841, 12,310.

BARNSTAPLE; a sea-port town in the county of Devon, distant from London 192 miles W. by S. It is situated on the eastern bank of the river Taw, over which there is a fine stone bridge of sixteen arches, in a broad and fertile valley bounded by a semi-circular range of hills. The streets are well paved and regular; the houses are built for the most part of stone, many of which are very handsome, and the supply of water is good. The river here expands into a fine bay, along the margin of which there is a delightful walk, at the end of which stands a statue of Queen Anne. There are here assembly and billiard rooms, and a theatre. The import trade of the place consists chiefly of wood from North America and the Baltic, lime from Wales, and in the coasting traffic with the various ports in the Bristol channel. The export trade consists in corn, oak, timber, and bark. The quay, near which stands the custom-house, is commodious and extensive, but is not accessible to vessels of more than 100 tons burden, from the accumulation of sand in the river. Many inhabitants are employed in ship-building, and various branches con-

nected with it. The most important manufactures are those of serge and inferior broad cloth, besides some of patent lace, which employ about 800 persons; there are also tanyards, a paper-mill, an iron foundery, and extensive works for the manufacture of pottery, bricks, and tiles. Fishing nets, which are woven in a loom, are also made here. Lead ore has been found in the neighbourhood, and limestone is abundant. The weekly market is held on Friday, and is celebrated for extensive dealings in corn and provisions. Population in 1801, 3748; in 1821, 5079; in 1831, 6840; in 1841, 10,259.

BASINGSTOKE; a market-town in the county of Hants, distant from London forty-five miles W. S. W., on the road to Exeter by Salisbury. It is situated near the source of the small river Loddon. It consists of several streets, paved and lighted, well supplied with water, and containing some neat and well-built houses. It possesses a handsome market-house, over which is a townhall, in which the petty sessions and the various meetings of the magistrates are held. Races are held here annually in September. The principal business carried on here is the trade in corn and malt, which is conducted to a considerable extent, and is facilitated in a great degree by the situation of the town at the junction of five important roads, and also by the Basingstoke canal which extends to the river Wey in Surrey, and thus communicating with the Thames, opens a passage to London. This canal was completed in 1796, at an expense of £180,000. In 1821, 365 families were returned as employed here in various trades and manufactures, of whom the majority were engaged in that of druggets and shalloons, but this branch of manufacture has declined considerably of late years. The market-day is Wednesday. Population in 1841, 4066.

BASS-ROCK; an island rock, consisting of green-stone and trap tuff, situated at the mouth of the Frith of Forth, at the distance of about a mile and a half from the coast of East Lothian, long. 2° 15′ W. lat. 56° 3′ N. It is a mile in circumference, and rises precipitously more than 400 feet above the level of the sea, the depth of the water at its base being from thirty to forty fathoms. It can be approached with safety only in fine weather, and is inaccessible on all sides except to the south-west, where one narrow passage may be ascended with difficulty. Near this passage is a castle, now in ruins, but once a place of great strength, consisting of four square towers and connecting works. During the persecution of the Covenanters, in the reigns of Charles II. and James II., this castle was made a state prison, and many unhappy Whigs and recusants were confined in it, some of whom perished under the hardships and privations which they were made to undergo. At the revolution, when the Stuarts were driven from the throne, a party of King James's adherents kept possession of the rock, and obstinately defended it for several years against the new dynasty. Being in possession of a boat, which they hoisted upon the rock, out of the reach of attack, and let down at pleasure, they supported themselves by making piratical attacks on passing craft; they had also some resources in the rock itself, which, besides a fountain of water, and innumerable sea-fowl, furnishes pasturage sufficient for the maintenance of a few sheep and a rabbit-warren. The boat, however, was at last seized, and the party was obliged to surrender, the Bass-rock being thus the last piece of British ground which yielded up the claims of the Stuart family. After this, the castle and its fortifications were dismantled.

The base of the rock is perforated completely through from east to west by a natural cavern fearfully dark in the centre, and through which the sea frequently dashes and roars with astounding violence, but which may be examined at low water on a calm day. When the tide is out, the water remaining in this curious fissure, at a few yards from its mouth, is not more than knee-deep. The young fishermen often go through it though its aspect is exceedingly terrific. At one of the entrances to this cavern it appears as if the Bass were composed of two immense rocks, the larger of which leans diagonally against the smaller, leaving this narrow chasm between them at the bottom, but closely joining with each other at all other points. There are several other caverns of considerable length, the openings into which resemble fretted Gothic windows or doors that have been made to deviate from the perpendicular by time or violence.

The Bass is now the property of Sir Hew Dalrymple Hamilton of North Berwick. The sea-fowl (particularly gannet or solan geese) which resort to it during the breeding season are innumerable. For the privilege of killing the fowl, the rock is rented at about £30 annually; it also draws about £10 as a pasturage for sheep. In Scotland, not including the far off Hebrides, solan geese only frequent the Bass and Ailsa Craig, a rock in the Frith of Clyde very similar to the Bass. They regularly arrive, year after year, at the end of February or beginning of March. At first a small flight is seen to wheel round the rock, and then alight on its precipitous sides with the most clamorous screams; these are soon followed by other flights, each more numerous than that which preceded it, and in a very few days after the arrival of the scouts and vanguard, the whole of the migratory colony is assembled, and no more stragglers are seen to arrive. They generally leave the Bass in parties, as they came, towards the end of October, though occasionally, when the winter is mild and fish abundant in the surrounding sea, they forego their journey to distant parts of the world, and stay there the whole year round. They lay several eggs each, but only sit upon one, which they hatch on the face of the bare rock. Their season of incubation is in June and July, when the cliffs literally seem covered with their snow-white plumage. A curious method is used by the fishermen in the neighbourhood to catch them: they take a small wooden plank, which is sunk a little below the surface of the sea by means of a stone or a piece of lead; on this plank they put a herring, and then drag the plank after them by a long rope, which leaves the trap considerably astern of the boat. The bird, attracted by the sight of its favourite food, wheels two or three times in the air, and then plunges down with such rapidity, that it often transfixes the plank with its bill, and is almost invariably stunned or killed by the shock. But, of course, their largest numbers are taken in the usual way, by descending the rock, attached to ropes, and killing them on their seats.

The plumage of the Solan geese, which is beautifully white and soft, is sold to upholsterers and others, who employ it in making feather-beds. Their flesh has a strong, fishy flavour, but is yet relished by some.

BATHGATE; a parish and town of Scotland, in Linlithgowshire. The parish extends seven miles in length by two in breadth, is highly cultivated, and abounds in lime-stone, iron-stone, free-stone, and coal. Silver was anciently wrought to a great extent, but the vein is exhausted or lost. The town is situated on the mid road between Edinburgh and Glasgow, eighteen miles distant from the former, and twenty-four from the latter city. From its situation, it has been considered as the Gandercleugh of the far-famed Jedediah Cleishbotham. Of late, an educational institution has been established here, endowed by Mr Newlands of Jamaica, a native of the town. It maintains five teachers, from whom all the children in the parish receive an excellent education. The inhabitants are chiefly employed in the neighbouring lime and coal works, and in weaving for the Glasgow manufacturers. Population of town and parish in 1841, 3928.

BATTLE; a market-town in the county of Sussex, distant from London fifty-six miles S. E; from Hastings eight miles N. W. It took its name from being the scene of the important battle (usually called the battle of Hastings) fought on the 14th Oct. 1066, between William, duke of Normandy, and Harold, king of England, in which the latter lost his crown and life. In commemoration of the event, the Conqueror founded a magnificent abbey here, which is now in ruins, with the exception of the gate-house. The town gradually sprung up in the vicinity of the abbey. It consists principally of a single street, and is now famous for the manufacture of fine gunpowder, for which there are several mills. Population in 1831, 2999, in 1841, 3039.

The erection of *Battle Abbey* was commenced by William the Conqueror in 1067, in conformity with a vow which he had made before the fight, but it was not completed till 1094, in the reign of Rufus. The high altar is asserted to have been placed on the spot where the dead body of Harold was found. It is more probable, however, as other authorities record, that the spot was that on which the royal standard was raised at the commencement of the battle. The house was originally intended to contain one hundred and forty monks, but only sixty were placed in it, who were brought from the monastery of Marmoustier in Normandy. Many manors were bestowed upon it, along with the most ample privileges,—exemption from all taxation, the rights of a free warren, treasure trove, and sanctuary; independence of episcopal jurisdiction; and, to the abbot, the singular prerogative of pardoning any condemned thief or robber whom he should meet on his way to execution. Its possessions, in course of time, were greatly extended, through the liberality of its regal patrons. The abbot enjoyed the dignity of wearing the mitre, and was always summoned to parliament so long as the ancient religion lasted. The last individual who held the office was named John Hamond. He was elected in 1529, and in 1538 he surrendered the monastery to the King. After the dissolution the property was granted to a person named Gilmer, who, after pulling down a great part of the buildings and disposing of the materials, sold the place to Sir Anthony Browne. The latter soon after commenced the erection of a dwelling-house on the site of part of the old monastery, which was finished by his son, the first Lord Montague. This building, however, fell afterwards into ruins; but the estate having been purchased by Sir Thomas Webster, the ancestor of the present Sir Godfrey Webster, a new house was erected, which still exists. It forms one of the sides of what appears to have been originally a complete quadrangle, of great spaciousness. The entire circuit of the ruins of the abbey, indeed, is not much short of a mile. Only a fragment of the church now remains, from from which it is impossible to trace either its form or extent. The apartment over the great gateway was long used as a town-house, until the 18th September, 1794, when the roof was driven in by a violent storm, and it has not been since repaired.

BEAMINSTER; a market-town in the county of Dorset, 141 miles W. S. W. from London. It is situated in a fertile vale on the banks of the river Birton, which is formed by the union of several rivulets rising in the immediate vicinity. It is a place of considerable antiquity, but most of the houses are comparatively modern, as it has three times suffered severely from fire. The first of these occurrences took place in 1664, during the civil wars, the second in 1684, and the third in 1781. Many of the inhabitants are employed in the manufacture of sail-cloth; that of woollen cloth, formerly the principal one, has begun to decline. There are also potteries for the coarser kinds of earthen ware, and manufactories of tin, iron, and copper-ware. The market-day is Thursday. Population in 1831, 2968; in 1841, 3270.

BEAUMARIS; a town in the island of Anglesey, North Wales, 241 miles N. W. from London. It has a small harbour opposite Bangor, at the entrance of the straits of Menai. The town consists principally of one street, which is spacious, and contains many handsome houses. It has of late been much resorted to in the summer-season, as a bathing place. A steam-boat plies during nine months of the year between this place and Liverpool. Elegant public baths, to which a reading-room is attached, have lately been erected. The situation is very fine, and the strand convenient. The view from the green commands a fine prospect of a portion of the strait inclosed by the promontory called the Orme's head, while the distance is bounded by the Caernarvon mountains, which rise ridge on ridge till they terminate in the lofty Snowdon. Population in 1841, 2701.

*Beaumaris Castle* was built by Edward I., to overawe the Welsh, whom he had, after an arduous struggle, subdued. The castle was the parent of the town, which Edward surrounded with walls, incorporated, and endowed with many privileges. The place was originally called Bonover, but it was changed to Beaumaris, from, as the interpretation most generally followed, *beau* fine, and *marais* a marsh. A low marshy site was selected, for the purpose of having a fosse round the castle, which, being filled with water from the sea, would enable vessels of a small size, by means of a canal, to discharge their lading close under the walls of the fortress. In the 17th volume of the "Beauties of England and Wales," it is stated that "Part of this canal, till very lately, was visible under the name of *Llyn y Green*, and the chains for mooring the vessels at the quay. The lowness of the site, the expansive diameter of its circular towers and bastions, together with the dilapidated state of its walls, deprives the structure, though a prodigious one, of that prominent character and imposing effect so strikingly apparent in the prouder piles of Caernarvon and Conway. The shape approaches to an oblong square, comprising a case encircling

the castle. This outer vallum consists of low but massy embattled walls, flanked by ten circular towers." The principal entrance of the castle faces the sea; within the fortified envelope, equidistant from the walls, is the body of the castle, the height of which far exceeds the envelope, and at a distance appears to rise majestically from it, as from a base. It is nearly quadrangular, with a grand round tower at each angle, and another in the centre of each face. The interior consists of an area, 190 feet square, with obtuse corners. The centre of the north-west side contains a great hall, seventy feet long and twenty-three broad, with a proportionate height; it has five large pointed windows, which form a bandsome front to the inner quadrangle. On the eastern side of the area there are remains of a chapel, the sides of which are ornamented with receding pointed arches. The elegantly-groined roof is supported by ribs springing from pilasters, between each of which is a long narrow window. There was a communication between the several parts of the inner court by means of a narrow surrounding gallery, a portion of which is still entire. The ruins of the castle are covered with gillyflowers, but which, as is stated, grow no where else in Anglesey. The castle was erected on lands belonging to several proprietors, whom Edward I., removed to distant places, remunerating them by estates, probably sequestrated. The castle is the property of the crown. Within the walls a tennis-court, fives-court, and bowling-green have been formed for the amusement of the inhabitants of Beaumaris.

BEAUVAIS; an arrondissement of the department of the Oise, in France, comprehending twelve cantons and 244 communes, and containing 130,263 inhabitants.

*Beauvais*, the chief city, is finely situated on the river Therain. The houses are chiefly of wood, and the trade of the place consists principally in the manufacture of tapestry, serges, and woollen cloth. Population 12,800.

The site of Beauvais was occupied, in very remote times, by a city, which is mentioned in the "Commentaries of Cæsar" by the name of Cæsaromagnus, and which it afterwards dropped for that of Bellovacum, derived from a Belgian people, the Bellovaci, by whom it was inhabited. It was ravaged by the Normans in the year 850, and at other periods; and few cities have experienced more calamities and frequent fires than Beauvais. The town still exults in the glory of having sustained two very formidable sieges without being taken. The first of these was in the year 1443, when the English were repulsed by the devoted heroism of Jean Signière; the second was in 1472, when Charles the Bold, Duke of Burgundy, unsuccessfully besieged it with 80,000 men. On this occasion, the females of Beauvais, headed by Jane Hachette, joined the garrison and fought with uncommon intrepidity. This heroine herself, on one occasion, seized the flag which the enemy were about to plant on the walls, and threw from the rampart the soldier by whom it was carried. The assailants were obliged to withdraw. Until the revolution, this event was annually commemorated, on the 10th of July, by a procession, in which the women marched first. The cathedral church of Beauvais is the principal architectural ornament of the town. The building was commenced in the year 1391. It is particularly noted for its choir, which is regarded as a master-piece of Gothic architecture, being as much admired for its height and breadth as for the lightness of the work and the fine arrangement of the vault and its outworks. It has ten pillars on each side of its length, with chapels all around. The pavement of the sanctuary, which is very large, is all of marble. This magnificent building seems never to have been finished.

BECCLES; a market-town in the county of Suffolk, 109 miles N. E. from London. It is situated on, and bounded on the north and west by the river Waveney, which is navigable from here to Yarmouth. It is a large and well built town, consisting of several streets diverging from a centre, in which is an extensive area used as a market-place. The houses are in general handsome, and there is a good supply of water for the use of the inhabitants. The environs are agreeable, and near the town is a good race-course with commodious stands, on which races are held annually. Saturday is the market-day. The principal trade is in corn and malt. Population in 1841, 4086.

BEDDGELART OR BETHGELERT; a parish in Wales, including a village of the same name, the latter distant from Caernarvon twelve miles S. E. The village, which consists of a number of cottages, stands at the junction of the rivers Colwyn and Glaslyn, in one of the retired and romantic valleys in Wales, inclosed on every side by lofty and precipitous mountains. Some of the inhabitants act as guides to the top of Snowdon, and obtain a considerable emolument from this source during the summer months. There is a good inn, which is almost entirely supported by tourists. The name of the place signifies "*the grave of Gelert.*" There is a tradition that a dog named Gelert, belonging to Llewellyn, the last prince of Wales, preserved the infant child of his master from the attack of a wolf. On the return of the father, he met the dog covered with blood, and seeing the clothes which covered his child's bed sprinkled with the same, he instantly conceived the idea that the dog had killed his child, and slew him on the spot. Discovering his mistake, he caused the dog to be buried in the centre of the valley, where a stone is yet shown as marking the spot. Within a mile of the village is the celebrated pass of Aberglaslyn. Population in 1841, 1397.

BEDFORD LEVEL (*a.*); a large tract of low land in England, consisting of about 400,000 acres. Peterborough Fen, which is that part of the Level running into Northamptonshire, and extending between Peterborough and Crowland, contains between 6000 and 7000 acres. One-seventh part of the Level is situated in Huntingdonshire. Nearly the whole of the Isle of Ely, which forms the northern division of Cambridgeshire, consists of this marshy ground. The south-east part of Lincolnshire,—usually termed Holland,—extending to the river Witham on the north, is a fenny district included in the Bedford Level: 63,000 acres are situated in Norfolk and 30,000 in Suffolk.

There is abundant evidence to prove that this part of the country was formerly dry land, at a much lower level than the present surface. From the convulsions of nature, and subsequently owing to embankments improperly made, which prevented the waters from the uplands flowing into channels through which they might discharge themselves into the sea, the tract was at length reduced to the state of a morass, where the waters, stagnating and becoming putrid, produced miasma destructive to the health of the inhabitants; while this extensive

district became impassable even to boats, in consequence of the sedge, reed, and slime with which it was covered.

The Roman emperor, Severus, who died in the beginning of the third century of the Christian era, was the first who intersected these fens with causeways. One of these was twenty-four miles long, extending from Denver, in Norfolk, to Peterborough. It was sixty feet broad, composed of gravel three feet in depth. This causeway is now covered with moor, from three to five feet in thickness. At that early period this low land, though damp, was by no means impassable; on the contrary, it appears that, up to the thirteenth century, the waters here usually flowed in natural channels, and had not devastated the surrounding country.

Dugdale relates, that in the year 1236, on the morrow after Martinmas Day, and for the space of eight days more, the winds were so boisterous that the sea was raised much higher than its usual bounds, and broke in at Wisbeach and other places of this district, so that many people and cattle, together with numerous small craft, were destroyed; and those of the inhabitants who survived were reduced to great distress. About seventeen years after the disaster, a similar accident again happened; and the inhabitants were called upon, by command of the king, to repair the banks. This compulsory work was performed but very inefficiently, for, within a few years, the sea-banks were again broken by the violence of the tides.

In 1436, the project of draining these fens engaged the attention of many persons of wealth and consideration in the country. Vast funds were expended in making ditches and banks impregnable, as it was supposed, to all assaults from inundations; but the next winter being wet and windy, the river Ouse, with the accession of its tributary brooks, swelled into a mighty torrent, and swept away all the bulwarks opposed to its progress.

In the year 1634, William Earl of Bedford (hence the name *Bedford Level*) undertook to drain these fens, stipulating to receive, as a compensation for the expense and trouble incurred, 95,000 acres of the reclaimed land: £100,000 were expended in the course of three years in this endeavour, and the work was partially accomplished; but the embankments proved defective, and the whole was again allowed to lie waste until the year 1649, when the Earl once more attempted the task for his former share of 95,000 acres. Three hundred thousand pounds were then laid out in draining, embanking, &c., and this time with success, as far as regarded the accomplishment of the work, but to the ruin of those who had been admitted shares, since the sum expended was much more than the 95,000 acres were worth. A regular system for continuing the draining and preserving the land already reclaimed, was now established; and, in 1664, a company was incorporated for its management: this consisted of one governor, six bailiffs, and twenty conservators; and, to the present day, the fens are managed and preserved by this corporation. Numerous cuts have been made, intersecting every part; some of these are so large and deep as to serve for navigable canals. In the Isle of Ely, the Old and New Bedford rivers are two cuts running nearly parallel to each other;—these are both navigable for upwards of twenty miles from Erith to Denvers. Various expedients are used for the proper draining of the marshes: where the regular and common means have failed, windmills have been erected which raise the water to the requisite height to admit of its being conveyed to receptacles sufficiently elevated, by which it may be carried off into its proper channel. These numerous windmills give a strange aspect to the Isle of Ely, where the towns and villages are built on the most elevated spots, which appear like islands rising from amidst low and wet marshes. Recourse has been had to numerous projects to complete and secure the drainage of the fens; and a vast expense has been incurred, sometimes much greater than the value of the land reclaimed. In Huntingdonshire, about the latter end of the last century, the tax raised on the land by the conservators, for its drainage and the preserving of its embankments, was in some instances so great, that the farmers preferred forfeiting their land rather than paying so exorbitantly for its preservation. In the present day, the art of drainage is better understood than when first this stupendous work was undertaken; but even now, in many places, the farmer is still liable to have the produce of his grounds carried away by sudden inundations. The peculiar situation of the Level renders it the receiver of the waters of nine counties, and therefore it is difficult to provide a sufficient outlet to the sea by which the descending torrent may find a safe egress. The great error committed in the commencement of the drainage was the making numerous small cuts instead of larger and deeper channels, by which, with the same inclination of descent, the water would safely pour into the sea without any risk of overflowing its banks; since in a narrow and shallow channel, owing to the smaller force exercised by the lesser body of water, the bottom must be made at a much greater inclination to cause the free flowing of the stream. Great improvements are now, however, constantly being made in the drainage and embankment of this extensive tract of land, and the errors of former methods are, as far as possible, being remedied.

BEE (*a.*) In addition to the description, given in the body of the work, of this interesting insect, we shall here introduce some practical observations on the management of bees as an object of rural economy.

A hive generally contains about twenty or twenty-five thousand bees. It is said that before swarming time, there may be upwards of forty thousand in a populous hive, the drones varying from six hundred to two thousand. The queen is the principal bee in the whole community, and is treated with great attention by the workers. The increase of the hive depends, of course, entirely upon her. Reaumur states that the female, or queen, lays in spring as many as twelve thousand eggs, in the lapse of twenty-four days, or at the rate of five hundred each day. Bonnar's estimate is somewhat lower, and probably nearer the truth, when he reckons, that, previous to the swarming season, she may lay about three hundred each day. It must be understood, however, that these estimates are only applicable to hives in a strong and healthy condition, and must vary according to the prolific nature of the queen. The queen is the bee which lays the whole of the eggs in a hive, and, consequently, is a female; the drones are the males, and the workers are undeveloped females. If the queen be accidentally killed, or intentionally removed from a hive, the bees soon become sensible of their loss, and a good deal of bustle and confusion ensue. This, however lasts but a short time,

for in the course of an hour or two the bees set about repairing their loss. For this purpose, they choose a larva of their own class, about two or three days old, pull down a few of the adjacent cells, and enlarge the selected one; and by feeding this larva with food exclusively destined for the nourishment of royal larvæ, a queen is in due time produced. The common workers perform the whole labour, both with respect to constructing the comb and feeding the larvæ or young, as well as collecting and storing up their precious treasure.

Those not experienced in the nature of bees, may be greatly deceived in the purchasing of hives for stock. It can only be by a minute examination of the interior of the hive, that a just estimate of its value may be gained; this, however, is attended with much difficulty, and some danger; but by the outward appearance and weight of the hive he may perhaps arrive at nearly a correct conjecture. The best season for purchasing is either in February or at the swarming season; in February it has survived the rigour of winter, and the purchaser has then only to attend to the population of the hive, or its apparent age. Let the purchaser observe with attention the number of bees which enter the hive loaded with the fruits of their industry; and if an apparently equal number departs in great bustle and hurry, he may then conjecture the hive to be in good health and well populated; and if a loud humming noise is heard within the hive, it is a certain sign of its strength and prosperity. The weight of a hive in February should never be under fifteen pounds, nor in autumn under thirty; and care should be taken that the hive is new, for in old hives a quantity of farina or bee-head accumulates, which adds considerably to its weight; the purchaser should also reject a hive when he observes its straw decayed and rotten, the ligaments loose, and frequent blotches over it, for it will cost him incessant trouble and vexation to keep it in a sufficient state of preservation, so as to maintain the health of his bees.

The apiary, or place where the bee-hives are placed, should in very warm situations be made to face the east, and in colder districts the south-east. It should be well protected from high winds, which not only prevent the bees from leaving the hive in quest of honey, but they also surprise them in the fields, and often kill them by dashing them against the trees and rocks or into rivers. The hives in an apiary should always be placed in a right line; but should the number of the hives be great, and the situation not capacious enough to admit of their being placed longitudinally, it is more advisable to place them over one another on shelves than in double rows on the ground. A bee, on leaving the hive, generally forms an angle of about forty-five with the horizon; the elevation of the hive should therefore be about two feet from the ground, in order to protect it from humidity. The greater the elevation of the hive, the longer is the flight of the swarm; and when they are at a certain point of elevation, the swarms are lost for ever to the proprietor. If the hives are to be placed in a double row, the hinder ones should alternate with, and be placed at such at distance from, the front ones, that when the bees take their flight no obstruction is offered to their ascent. Huish recommends placing every hive upon a single pedestal, and at two or three feet distance from each other. By this means, when any thing happens to one hive, the others are less likely to be disturbed than when placed on a shelf in a bee-house; and the hive may be chained down and locked. It is usual to have three or four legs or supports to the bee-boards; but those who have tried one will never resort to more, as one is a much better protection from vermin and insects. The space in front of the apiary should be kept clear of high plants for two or three yards.

The variety of bees employed is a matter of some consequence. To the common observer all working bees, as to external appearance, are nearly the same; but to those who examine them with attention, the difference in size is very distinguishable; and they are, in their vicious and gentle, indolent and active natures, essentially different. Of the stock which Howison had in 1810, it required 250 to weigh an ounce; but they were so vicious and lazy that he changed it for a smaller variety, which possessed much better dispositions, and of which it required 296, on an average, to weigh an ounce. Whether size and disposition are invariably connected, is not determined.

The best material and form for hives is a straw thimble or flower-pot placed in an inverted position. Hives made of straw, as now in use, have a great advantage over those made of wood and other materials, from the effectual defence they afford against the extremes of heat in summer and cold in winter.

The size of hives should correspond as nearly as possible with that of the swarms. This has not had that attention paid to it which the subject demands, as much of the success in the management of the bees depends on that circumstance. From blind instinct bees endeavour to fill with combs whatever hive they are put into, before they begin to gather honey. Owing to this, when the hive is too large for its inhabitants, the time for collecting their winter store is spent in unprofitable labour; and starvation is the consequence. This evil also extends to occasioning late swarming the next summer; it being long before the hive becomes so filled with young bees as to produce a necessity for emigration, from which cause the season is too far advanced for the young colonies to procure a winter stock. A full-sized straw hive will hold three pecks; a small-sized from one and a half to two pecks.

The Polish hive appears to be the second in merit to that described, and perhaps it may deserve the preference, if the mode of using it were generally known. It is simply the trunk of a tree, of a foot or fourteen inches in diameter, and about nine feet long. It is scooped out (boring in this country would be better) for about six feet from one end, so as to form a hollow cylinder of that length, and of six or eight inches diameter within. Part of the circumference of this cylinder is cut out during the greater part of its length, about four inches wide, and a slip of wood is made to fit the opening. On the sides of this slip or segment notches are made every two or three inches, of sufficient size to allow a single bee to pass. This slip may be furnished with hinges, and with a lock and key; but in Poland it is merely fastened in by a wedge. All that is wanting to complete the hive is a cover at top to throw off the rain; and then it requires only to be placed upright like a strong post in the garden, so as the bottom of the hollow cylinder may be not nearer the ground than two feet, and the opening slip look to the south. When a swarm is to be put in, the tree, with the door or slip

opened, is placed obliquely over it; when the bees enter the door is closed, and the holes stopped with clay till the hive is planted or placed upright. When honey is wanted, the door is opened during the finest part of a warm day, when most of the bees are out; its entire state is seen from top to bottom, and the operator, with a segar in his mouth, or with a lighted rag, to keep off the bees from his hands, cuts out with a crooked knife as much comb as he thinks fit. In this way fresh honey is obtained during the summer, the bees are never cramped for room, nor does it become necessary to kill them. The old comb, however, is annually cut out, to prevent or lessen the tendency to swarming, which, notwithstanding this and the size of their dwelling, they generally do once a year; for the laws of nature are not to be changed. Though it be a fact that a small swarm of bees will not do well in a large hive; yet, if the hive extend in length and not in breadth, it is admitted both by Huber and Huish that they will thrive in it. "If too great a diameter," says Huber, "be not given to the abode of the bee, it may without danger be increased in the elevation; their success in the hollow trees, their natural domicile, incontestably proves the truth of this assertion."

The feeding of bees is generally deferred till winter or spring; but this is a most erroneous practice. Hives should be examined in the course of the month of September, or about the time of killing the drones; and if a large hive does not weigh thirty pounds, it will be necessary to allow it half a pound of honey, or the same quantity of soft sugar made into syrup, for every pound that it is deficient of that weight; and in like proportion to smaller hives. This work must not be delayed, that time may be given for the bees to make the deposit in their empty cells before they are rendered torpid by the cold. Sugar simply dissolved in water (which is a common practice), and sugar boiled with water into a syrup, form compounds very differently suited for the winter store of bees. When the former is wanted for their immediate nourishment, as in spring, it will answer equally as a syrup; but if to be laid up as store, the heat of the hive quickly evaporating the water, leaves the sugar in dry crystals, not to be acted upon by the trunks of the bees. Hives may be killed with hunger while some pounds' weight of sugar remain in this state in their cells. The boiling of sugar into syrup forms a closer combination with the water, by which it is prevented from flying off, and a consistence resembling that of honey retained. Howison had frequent experience of hives, not containing a pound of honey, preserved in perfect health through the winter with sugar so prepared, when given in proper time and in sufficient quantity. The quantity of food which ought to be given to a hive may be calculated in the proportion of two pounds a month; but if the weather be very cold, a less quantity will suffice. When a hive is fed in the spring, it should always be after sunset, when the bees have returned from the fields; otherwise the most disastrous consequences may ensue from the robberies committed by the bees of other hives. If they are fed in the morning, it must be before sunrise, and the entrance instantly stopped to keep out depredators; for as the bees leave the hive on the very first appearance of day-light, a later period would prevent the return of all those who had left the hive previous to the entrance being secured. The following receipt for bees is recommended as beneficial and economical. To two quarts of good ale put one pound of moist sugar; boil them until the sugar is wholly dissolved, carefully skimming it; when it is cold, it will be found of the consistency of honey, and it may be given to the bees in the following manner: If the bees are in the plain cottage hive, an eek of the same diameter as the hive must be provided, and from three to four hands in height. When the sun is set, and the bees have retired, let the hive be gently raised, and the eek placed on the stool; then, having filled a soup-plate with the food, place it on the eek, and put down the hive. To prevent the bees being drowned in the liquid, it is necessary to place some straws over the plate, and over the straws a piece of paper, either thickly perforated or cut into nicks; these nicks, however, must not run parallel with the straws, but either across or diagonally; the entrance must then be closed, and the plate removed on the following morning, and the whole of the liquid will be transferred into the combs.

To wooden protect hives from the cold, they are covered with straw or rushes, about the end of September, or later, according to the climate and season. This is an essential business, as well covered hives always prosper better the following season than such as have not been covered. In October, the aperture at which the bees issue should generally be narrowed, so as only one bee may pass at a time. Indeed, as a very small portion of air is necessary for bees in their torpid state, it were better, during severe frosts, to be entirely shut up, as numbers of them are often lost from being enticed to quit the hive by the sunshine of a winter day. It will, however, be proper at times to remove, by a crooked wire, or similar instrument, the dead bees and other filth which the living at this season are unable to perform of themselves. To hives, whose stock of honey was sufficient for their maintenance, or those to which a proper quantity of sugar had been given for that purpose, no further attention will be necessary until the breeding season arrives. This, in warm situations, generally takes place about the beginning of May; and in cold, about a month after. The young bees, for a short time previous to their leaving their cells, and some after, require being fed with the same regularity that young birds are by their parents; and if the store in the hive be exhausted, and the weather such as not to admit of the working bees going abroad to collect food in sufficient quantity for themselves and their brood, the powerful principle of affection for their young compels them to part with what is not enough for their support, at the expense of their own lives. To prevent such accidents, it is advisable, if during the breeding season it rain for two successive days, to feed all the bees indiscriminately, as it would be difficult to ascertain those only who require it.

The swarming of bees generally commences in June, in some seasons earlier, and in cold climates or seasons later. The first swarming is so long preceded by the appearance of drones, and hanging out of working bees, that if the time of their leaving the hive is not observed, it must be owing to want of care The signs of the second, are, however, more equivocal, the most certain being that of the queen, a day or two before swarming, at intervals of a few minutes, giving out a sound a good deal resembling that of a cricket. It frequently happens that the swarm will leave the old hive, and return again several times, which is always owing to the queen not having accompanied

them, or from having dropped on the ground, being too young to fly to a distance. Gooseberry, currant, or other low bushes, should be planted at a short distance from the hives, for the bees to swarm upon, otherwise they are apt to fly away. When a hive yields more than two swarms, these should uniformly be joined to others that are weak, as from the lateness of the season, and deficiency in number, they will otherwise perish. This junction is easily formed, by inverting at night the hive in which they are, and placing over it the one you intend them to enter. They soon ascend, and apparently with no opposition from the former possessors. Should the weather, for some days after swarming, be unfavourable for the bees going out, they must be fed with care until it clears up, otherwise the young swarm will run a great risk of dying.

The honey may be taken from hives of the common construction by three modes, partial deprivation, total deprivation, and suffocation.

Partial deprivation is performed about the beginning of September. Having ascertained the weight of the hive, and consequently the quantity of honeycomb which is to be extracted, begin the operation as soon as evening sets in, by inverting the full hive, and placing an empty one over it; particular care must be taken that the two hives are of the same diameter, for if they differ in their dimensions it will not be possible to effect the driving of the bees. The hives being placed in each other, a sheet or large table-cloth must be tied round them at their point of junction, in order to prevent the bees from molesting the operator. The hives being thus arranged, beat the sides gently with a stick or the hand, but particular caution must be used to beat it on those parts to which the combs are attached, and which will be found parallel with the entrance of the hive. The ascent of the bees into the upper hive will be known by a loud humming noise, indicative of the pleasure in finding an asylum from their enemy; in a few minutes the whole community will have ascended, and the hive with the bees in it may be placed upon the pedestal from which the full hive was removed. The hive from which the bees have been driven must then be taken into the house, and the operation of cutting out the honeycomb commenced. Having extracted the requisite quantity of comb, this opportunity must be embraced of inspecting the hive, and of cleaning it from any noxious matter. In cutting the combs, however, particular attention should be paid not to cut into two or three combs at once, hut having commenced the cutting of one, to pursue it to the top of the hive; and this caution is necessary for two reasons. If you oegin the cutting of two or three combs at one time, were you to extract the whole of them, you would perhaps take too much; and secondly, to stop in the middle of a comb would be attended with very pernicious consequences, as the honey would drop from the cells which have been cut in two, and then the bees, on being returned to their native hive, might be drowned in their own sweets. The bees also, in their return to their natural domicile, being still under the impression of fear, would not give so much attention to the honey which flows from the divided cells; and as it would fall on the board, and from that on the ground, the bees belonging to the other hives would immediately scent the wasted treasure, and a general attack on the deprivated hive might be dreaded. The deprivation of the honeycomb being effected, the hive may be returned to its former position, and reversing the hive which contains the bees, and placing the deprivated hive over it, they may be left in that situation till the morning, when the bees will be found to have taken possession of their native hive, and, if the season proves fine, may replenish what they have lost.

Total deprivation is effected in the same manner, but earlier in the season, immediately after the first swarm; and the bees, instead of being returned to a remnant of honey in their old hive, remain in the new empty one: which they will sometimes, though rarely, fill with comb. By this mode, it is to be observed, very little honey is obtained, the bees in June and July being occupied chiefly in breeding, and one, if not two, swarms are lost.

Suffocation is performed when the season of flowers begins to decline, and generally in October. The smoke of paper, or linen rag soaked or smeared with melted sulphur, is introduced to the hive by placing it in a hole in the ground, where a few shreds of these articles are undergoing a smothering combustion; or the full hive may be placed on an empty one, inverted as in partial deprivation, and the sulphureous smoke introduced by a fumigating bellows, &c. The bees will fall from the upper to the lower hive in a few minutes, when they may be removed and buried, to prevent resuscitation. Such a death seems one of the easiest, both to the insects themselves, and to human feelings. Many plans have been devised for obtaining the honey without the destruction of the bees, the most successful of which appears to be that of Mr Nutt of Lincolnshire, which consists in the construction of the hive and regulation of its temperature.

In *Russia*, the management of bees forms an important branch of husbandry. It is there conducted on a large scale, and affords the principal means of subsistence to some of the nations or tribes who inhabit the vast Russian territory. The Bashkirs, and some other tribes inhabiting the country west of the southern Ural, are those who devote themselves the most exclusively to this branch of business, which seems to be carried on with the greatest vigour in the governments of Kazan and Oufa. There are individuals among the Bashkirs who, besides their bee-gardens, possess hundreds, and sometimes thousands, of wild-bee hives in the forests. It is only necessary to describe the process in use among the Bashkirs, as it is the same which is followed by the other tribes that apply themselves to this useful pursuit. It is most usual to prepare in the forests for the bees a very peculiar description of hives, which the bees spontaneously enter, and there deposit their honey. When it is the intention of the Bashkirs to prepare receptacles for the bees, they repair to the forest, and select the straightest and strongest trees which they can find, always preferring the hardest kinds of timber. On these, at the height of twenty-four or thirty feet above the ground, they construct the bee-house by hollowing out a large smooth cavity in the trunk of the tree with a tool resembling a chisel. When the work is completed, the aperture is closed with a board, in which are several holes large enough to afford the bees free ingress and egress. The manner in which the Bashkirs execute this rather difficult work, and the agility with which they ascend the loftiest and smoothest trees, affords a fine display of dexterity and skill.

A rope and a sharp hatchet is all that they require to assist their ascent. The workman places himself against the trunk of the tree, around which and his own body he fastens a rope. He then with his hatchet cuts a notch in the trunk at a certain height, and setting his feet against the tree, springs to that height by the help of the rope. He supports himself by the rope, resting his feet in the notch until he has cut another, to which he ascends in the same manner; and this is continued until he reaches the desired point. As he is to make some stay there, he notches in the tree a more convenient stand for his feet than was before necessary: resting his feet in this, and supporting the weight of his body by the rope, he then commences his work, the tools required for which he has taken up in his girdle. It is always considered necessary to cut away the branches below the hive, in order to render the access more difficult to the bears, which still exist in considerable numbers in the Ural, and which are by far the most dangerous enemies known to the bee cultivator. Some of the measures adopted to secure the hives from the depredations of these animals are very curious. The most common contrivance is to insert a number of knives or iron spikes bent upwards into the trunk of the tree. The bear, by the exercise of great caution and sagacity, is generally able to clamber up a tree thus defended without much difficulty; but in sliding down again he seldom escapes with his life, or at least without being desperately wounded, being caught by the hooks and lacerated by the knives in the descent. Some old and experienced bears, who have learned what to expect from these instruments, have been known to loosen or break them with their paws as they went up. Another method, which is considered more certain than the former in its effects, is to suspend a thick and heavy block of wood before the aperture of the hive. This block the bear flings from him repeatedly with increasing fury; but as often as he does so, the block, of course, returns and hits him violent blows upon the head. Irritated to the utmost, the animal increases the violence of his efforts, and at last, exhausted by his rage and exertions, and partly stunned by the blows, falls upon the spikes that are planted on the ground to receive him. But a more ingenious contrivance than either of these is to take the bear in a trap of very simple construction. It is not unlike a large scale, such as we sometimes see in wholesale shops; consisting of a board with ropes at each corner united at the top. It is then fastened to a branch above the hive in such a manner that if left suspended perpendicularly, the board would be at some distance from the trunk. But when the rope is properly fastened to the branch, the board is drawn from the perpendicular, and attached slightly to the trunk on a level with the door of the hive, in such a manner that the fastening remains the only obstacle to prevent the bear from obtaining access to the hive. When the bear ascends and finds a seat which seems so admirably adapted to his convenience, he gets upon it, and soon commences tugging to remove the only obstacle between him and his desired prey; but as this obstacle is the fastening of the board to the trunk of the tree, the animal no sooner succeeds in his object than his seat swings off with him to its perpendicular. He thus remains suspended in the air, in a sufficiently mortifying situation, until some one arrives to shoot him: but sometimes he throws himself off, and is then impaled upon the pointed stakes which are planted round the tree.

It may be interesting to compare this method of dealing with bees at the eastern extremity of Europe, with the process which is pursued at the opposite extremity of the same continent.

In *Portugal*, when it is intended to form a colony of bees, a spot of ground is chosen exposed to the south, or south-east, well sheltered from the northern blasts, and surrounded with shrubs and flowers; the more of rosemary there is among these the better. In selecting a situation, the condition of the neighbouring grounds is a point of consideration, as bees are said to range as far as a league from their hives in quest of food. The situations being chosen, lanes five or six feet wide are cut through the shrubby thickets. The fences of these lanes are of about the same height, and are formed into small recesses or niches for the reception of the hives. The hive, which is formed of the rind of the cork-tree, is usually of a cylindrical shape, about twenty-seven inches high by fourteen in diameter. This is covered with an inverted earthenware pan, the edge of which projects over the cylinder like a cornice. The whole is fastened with wooden pegs, and the joints are stopped with peat. In the front of the cylinder, at the height of about eight inches, is a small aperture, at which the bees go in and out. The interior is divided into three equal parts, separated by cross sticks. Here the bees form their combs and cells, and deposit their honey. When the bees swarm, which is usually in May or June, the hives are placed to receive them where they alight. If they descend on a tree they are shaken off. The person who does this sometimes defends his face with a wire mask and his hands with gloves; but in general this precaution is not considered necessary, as it is known that bees only sting when much irritated. Sometimes the bees are so wild that they fly away when it is attempted to collect them. When this happens, they may still be recovered. A sheet is, during the night, spread out upon the ground near the swarm. They alight on this, when a hive with the entrance closed is placed upon them, and the whole is then carried home in the sheet. When the time arrives for collecting the honey, the business is usually performed during the heat of the day, when most of the bees are absent. The operator, whose head and hands are guarded in the manner before mentioned, is attended by a person with a small chafing dish, containing a coal fire, which is covered with damp peat, to make the greater smoke. This smoke is introduced into the hive from the top of the cylinder, when the bees which happen to be there either fly away or remain stupified at the bottom. The hive is then taken to pieces by drawing out the pegs, and the comb is cut out, except a small portion which is left to induce the bees to adopt it as the nucleus of a new comb. After this work has been performed, the hive is put together again, and replaced in its former situation. The apiarian often visits the ground to repair any accident that may have happened. He is careful not to destroy any snakes which may frequent the place, as they never molest the bees, but destroy the toads and lizards which are obnoxious to them. When a hive is decayed, it is taken asunder and fumigated, and then the bees forsake it and seek shelter in an adjoining hive which has been previously prepared for the purpose. This operation is commonly performed

in the spring, when the flowers begin to open, and there is plenty before them. As the bees, in returning from their excursions, are heavily burdened and fatigued, great care is taken that there shall be nothing near the hives to obstruct their descent, which is not in a perpendicular but an oblique direction.

In *Greece*, hives are made of willow or osiers, fastened like our common dust haskets, wide at the tops, and narrow at the hottom, or plastered with clay or loam within and without. They are set the wide end upwards. The tops, being covered with broad flat sticks, are also covered with clay at the top; and, to secure them from the weather, they cover them with a tuft of straw, as we do. Along each of these sticks the bees fasten their combs, so that a comb may be taken out whole, without the least bruising, and with the greatest ease imaginable. To increase them, in spring time, that is, in March or April until the beginning of May, they divide them, just separating the sticks, on which the combs and bees are fastened, from one another with a knife; so taking out the first comb and bees together on each side, they put them into another basket in the same order as they were taken out, until they have equally divided them. After this, when they were both again accommodated with sticks and plaster, they set in the new basket in the place of the old one, and the old one in some new place. And all this they do in the middle of the day, at such a time as the greatest part of the hees are abroad, who, at their coming home, without much difficulty, by this means divide themselves equally. This device hinders them from swarming and flying away. In August they take out their honey, which they do in the daytime also, while they are abroad; the bees being thereby, they say, disturbed least; at which time they take out the combs laden with honey as hefore, that is, beginning at each outside, and so taking away until they have left out such a quantity of combs in the middle as they judge will be sufficient to maintain the bees in winter; sweeping those bees that are on the combs they take out into the basket again, and again covering it with new sticks and plaster. It has been douhted whether, in England, the like quantity of honey may be taken without endangering a scarcity in winter, the bees probably not collecting so much. Let less, therefore, he taken away. By these means, it has been said, the great increase and multiplying of the stock would soon equalize and far exceed the little profit we make by destroying them.

In the *United States of America*, honey is largely used, and the culture of bees is therefore prosecuted to a much greater extent than in this country. The hives there are generally made of wood, and their usual size ahout ten or twelve inches square. A common board of an inch in thickness is generally used; and although some persons prefer two-inch plank, hives constructed in this manner are unnecessarily heavy and clumsy. Some bee-keepers erect sheds fronting the east or south-east; but excepting the protection they afford from the heat of the mid-day sun, but little advantage is considered to arise from sheds of this description. The more common mode therefore is, to drive three posts into the ground, leaving them about thirty inches above the surface; and upon the flat tops of these a hoard is securely fixed. On this board or platform, which ought to have a slight inclination towards the front, the hive is placed, a groove of sufficient depth to carry off the water having been previously cut in the platform. Besides this, there is also another board of similar dimensions placed upon the top of each hive, which answers the two-fold purpose of screening them from the meridian sun, as well as from much of the rain that chances to fall. The cover may be screwed to the hive with a couple of screws, or held in its position hy placing thereon a flat stone, which may be removed at pleasure, It is by no means unusual to see thirty or even sixty bee-hives, in an orchard or bee-garden, placed upon posts as above described, in many parts of the country. This is decidedly the hest method of keeping bees for those who are in the habit of "driving" them when they take the honey; for the old-fashioned and barbarous plan of destroying the bees is very seldom resorted to. In this system of "driving," great facility is found to exist in the common square wooden hive; for since the mouths or openings of the new hives are quite regular, and of precisely the same dimensions as the old one, the openings of the two exactly correspond to each other.

The process of "driving" is exceedingly simple. After a sliding piece of thin board (fixed there for that purpose) has been moved forward so as to shut up the small opening which admits the bees into the hive, the hive is then moved gently from off the board upon which it stood, and carefully placed upon an empty hive, which must be in readiness, mouth upwards, to receive it; the sides of each exactly corresponding. A cord, or strap, which had been previously placed upon the ground, and under the empty hive, must be passed upwards over the one containing the bees, binding the two hives together as securely as possible, which may be easily effected where they are made in the manner and of the materials here described. This having been accomplished, the position of the hives must then be reversed, so that the full one may be underneath and its mouth upwards. It must then be struck smartly, but not forcibly, with some hard body (a short stick will answer very well), and after a few minutes' hammering the bees will have ascended into the empty hive. The fastening must then be quickly undone, and the new hive removed gently to the platform where the old one stood. The whole business, if judiciously managed, will not occupy more than a few minutes; and there will not probahly remain behind more than a score or two of hees, which may he destroyed in the usual way, or else suffered to escape. There will at first be great turmoil and confusion amongst the bees in their new abode, so that it is generally considered prudent not to withdraw the slide that shuts them in until the middle or afternoon of the following day. In most cases they prudently begin to work as soon as they find themselves robbed of their store of sweets; but occasionally they continue dissatisfied for some time, and attack the neighbouring hives that have been undisturhed. The customary plan is to take away the whole of the honey in the hive from which the bees have been expelled, provided the season be sufficiently early to admit of their laying up an ample stock for the ensuing winter; but sometimes, when the swarm is not very strong, or when the summer is considerably advanced, only alternate courses of the honeycomb are extracted; in which case the bees have to be "driven" back into their old quarters. This, however, is but an indifferent plan; for since the weather generally is

hot at that period of the year, there is often much damage done to the remaining honeycomb, and also considerable loss both of honey and bees.

Although the system of "driving" is pretty general amongst bee-keepers, of late years many persons have resorted to another plan, and, in some instances, with considerable success. The plan is invariably to keep the bees in open sheds; and instead of permitting the hives to throw off swarms annually, to *compel* them to take possession of new hives as often as may appear necessary. When a hive gives indications of throwing off a swarm it is slidden back upon the platform where it stands, and a new hive, with openings or passages *behind*, corresponding exactly with those in the old one, is pushed close up against it; so that the bees are under the necessity of passing through the new one whenever they go abroad; and in this new apartment the colony, which would have soon been thrown off as a new swarm, commences operations. An improvement upon compelling the occupants of the old hive to pass through the new one, consists in having an opening, in the rear of the old one, which has been kept closed until the new hive has been added to the other, but which may now be opened at pleasure by the withdrawal of a slide, by which means the bees will find an easy egress at the rear; for since the honeycomb is placed in rows parallel with the *sides* of the hive, there will be nothing to prevent a free passage to the rear after the front outlet has been closed. Where this plan is acted upon, the bee-houses should be open both in front and rear, so that it would be immaterial on which side the entrance was placed, although there is apparently some objection to the bees entering the hive on the contrary side to that which they have been accustomed to. Where the new hive has the appearance of being full of bees another empty hive may be added precisely in the same manner as the last, and where the platform is sufficiently capacious, a considerable number of hives may be joined to each other in the manner aforesaid, should it be deemed advisable to do so. When it becomes desirable to take away some honey, the process is easily effected. The hives being all exactly of the same dimensions, and the doors or openings of each hive having suitable slides, so as to close them when necessary, any hive which may be selected can be withdrawn in a moment after the bees having been "drummed out," and an empty one introduced in its place. In all the various processes of abstracting honey, where it is intended that the lives of the bees should be spared, care ought to be taken to perform it early in the season; since it is better to be rather too early than a little too late, for in the latter case the consequence is the almost certain loss of the hive.

In some of the forests of America, wild bees of the domestic or honey-bee species are so abundant that many persons make a livelihood by "bee-hunting," that is, by traversing the woods in search of the natural hives of the honey-bee. Bee-hunting requires a quick and practised eye, and some acquaintance with the habits of these useful and industrious insects; for where the trees are lofty, the foliage thick, and the surface of the ground rough and encumbered with fallen timber, the bee-hunter of long experience finds it difficult to keep up a successful chace with the honey-laden bees on their way to their storehouses in the hollow limbs of some decaying monarch of the forest. When he believes that he has discovered the retreat of the little wanderers, he deals upon the bole of the tree a few strokes, anxiously watching the crevice he observed the home-bound insects enter; and should there be a hive or family in some cavity far above him, the noise and concussion produced by the bee-hunter's blows will most probably create such a disturbance, that many of the inhabitants may be seen issuing from their suspected retreat. He next proceeds to hew down the tree; which having done, he lights a fire in order to smoke out or suffocate his victims. Sometimes a bee-tree will contain a large quantity of honey and honeycomb; but as the tree has to be hewn in pieces in order to get at the treasure (a portion of the honey is usually very old), together with the effect of the concussion when the tree falls, a large proportion of the prize is lost, or rendered useless, since much of the comb gets broken to pieces and mixed with the decayed and rotten wood. The honeycomb is commonly of greater value than the honey; for where bees are tolerably abundant, honey is scarcely saleable at any price; while bees'-wax is at all times a marketable article, either at the country stores or in any of the towns and cities. It is not unusual to find three or four hundred weight of honey and honeycomb in one of those bee-trees; but judging from the very dark colour of the comb, and the peculiar flavour of the honey, a portion of it appears to have been stored up during several years.

Besides the common bee, there are several other bees in Britain, which also produce honey, but which have never been domesticated. There is the common *humble bee*, black, with the hinder part of its abdomen white; the *black and red bee;* the *brown* or *foggy bee*, somewhat resembling the *carder* in its habits; and the *black bee*, noted for the fierce defence of its nest, which, after all, is not much worth plundering. In the habits of all these bees, there are circumstances which render their domestication almost impossible. The course of their life through the summer is as follows:—One bee alone having survived the rigours of winter, generally sets to work, about the early part of June, to construct a nest for herself and her future progeny: these nests are of different kinds, according to the habits of the insect; some of them, as the humble bee, going deep into the earth in dry banks; others preferring heaps of stone or gravel; and the brown, foggy, or moss bee, choosing always some bed of dry moss, generally of the long interwoven kinds called *hypnum*. The nest, as first constructed, is of small dimensions within: but when the bee has deposited her eggs, and young begin to be hatched, they all labour in common, and soon produce much more ample accommodations. The cells which we find in these nests are not the work of the old bee, but are formed by the young insects in the same manner as the cocoons of silk-worms; and when the perfect insect is released from them by the old bee, which the latter does by gnawing off their tops, they are then employed as honey-cups. The honey which is here deposited is not, however, intended as a store for winter: it is collected solely to meet the wants of the growing colony in rearing its young bees, which are fed on a mixed food of honey and pollen (dust from the flowers of plants) while they are in the caterpillar state. The wants of the young go on increasing for a great part of the summer, and the quantity of honey they consume is very large: towards the middle or latter part of September, however, the energies of the

bees begin to wax fainter, and little further progress is made in adding to the colony, or in collecting honey. Cold and showery days begin, even by this time, to thin the number of the insect population, who are now seen creeping slowly, with damp and heavy wings, upon the stalks and petals of flowers, where they were formerly seen actively buzzing about in search of honey. The stores of the honey-cups have not outlasted the wants of the young unfledged bees, of which they were the proper food; and if the nests be examined now, these cups are found quite empty. The bees which survive the accidents of rain, cold, and frost (for they are now frequently overtaken by frosty nights in their languid journey homeward), by degrees forsake the nest and its furniture, leaving the latter as a prey to mice, beetles, or other animals. To shelter themselves for the winter, they seek out some dry bank (not preferring one exposed to the sun), where they penetrate to the depth of eighteen inches or two feet into the earth, pushing up the earth behind them, and leaving no visible track by which they have descended. In these situations they are often found by labourers and others in digging the earth; and such people are often greatly puzzled to imagine how the insect can have reached such a depth. Persons who have attended to the habits of wild bees, can often fix on the spots where they take refuge, digging for and finding them with the greatest certainty.

The experiment of domesticating the different kinds of wild bees, has been tried; and it was found, that by removing their nest cautiously in an evening, and placing it in a quiet situation, in a garden or other place where they could be observed, they went on with their works without apparent alarm or interruption. During the whole summer, they continued to prosecute their occupations with the same industry as other bees; but about September, as we have mentioned, the hive began to turn languid, and the numbers which appeared going and coming about the entrance became daily smaller. It was imagined they had taken refuge within the hive; but when this was opened, after all seemed to have ceased their labours, every thing was found empty and deserted; there were neither bees nor honey; the stronger and younger insects, no doubt, having gone to make burrows for themselves in the earth, and the older ones having gradually fallen victims to the accidents of approaching winter.

Many works have been written on the nature and habits of bees. Among those who have contributed largely to our knowledge of the subject may be mentioned, Swammerdam, Reumar, Schirach, Thorley, Wildman, Huish, Howison, Huber, and Bonner. The two latter made many valuable discoveries regarding the bee under very peculiar and, one would almost imagine, insurmountable disadvantages. Huber was stone blind, and Bonner's researches were conducted in the midst of a populous city, and during the pressure of daily toil,—he being a poor weaver, and his hives being kept for many years in a *garret* in the Gallowgate of Glasgow! Bonner's work on Bees was published at Edinburgh in 1795, (one volume, 8vo) and an English translation of Huber's was published in 1806, (12mo.)

BEGGEE JAN; a fanatical prince of Bucharia, in Tartary, who, towards the close of the last century, exercised a powerful sway over the Usbeck Tartars, by leading an ascetic and apparently devout life. More than fifty years ago, an almost supreme authority was exercised over the Usbecks of Bucharia by the Ameer Daniel, who had possessed himself of the person of the nominal prince. When this Ameer died he divided his wealth among his family, but declared his eldest son, Beggee Jan, to be his heir. This person had, however, for some time previously to the death of his father, clothed himself in the patched garment of a religious mendicant, and shut himself up in a mosque, that he might enjoy his devout meditations undisturbed. When his portion of the inheritance was brought to him, he refused to receive it, but directed it to be distributed among those who had suffered from the extortions of his father. He then clothed himself in the coarse dress of a supplicant for mercy, and hanging a sword around his neck, went through the streets of Bucharia, imploring, with tears in his eyes, the blessings and forgiveness of the inhabitants for his late father, for whose sins he begged that his own life might be taken in expiation. Beggee Jan was before this known to the learned as one deeply versed in theology, and as the writer of some esteemed treatises: but he had not, until this time, appeared before the people, who were much struck by his apparent humility and sanctity, and crowded around him as if he had been a prophet, joining with him in prayers for blessings upon the Ameer Daniel. Beggee Jan then returned to his retirement, and secluded himself from all but a few chosen disciples. Having professed himself one of those devotees who seek or have attained a state of mental blessedness and abstraction which leads them to despise all human pleasure and ambition, it was requisite that he should not easily be persuaded to assume that power which the people entreated him to undertake. They were wearied out by the contests among his relations for the power which he seemed to scorn, and crowds assembled daily about the mosque where he resided, and followed him wherever he went. It is said there were at that time several thousands of gambling and drinking-houses in Bucharia, and the first proof which Beggee Jan gave of his authority with the people was to destroy all these houses; and so generally was he reverenced, that even those who were ruined by the measure are said to have assisted in carrying it into effect.

Beggee Jan's own family suffered so much in the conflict for power, that its surviving members at last joined in the general request that he would assume the government. But he continued to refuse, until, upon occasion of a serious commotion in the capital, in which about a thousand lives were lost, the nominal king and all the nobles went to the mosque where he resided, compelled him to attend them to the tomb of his father, and at that sacred spot solemnly invoked him to save his country. Apparently overcome by their entreaties, he promised to give his counsel in the management of public affairs; but he continued to abstain from active interference, until a neighbouring chief, presuming upon the apparent weakness of the government, ventured to invade Bucharia. This so excited the indignation of Beggee Jan, that he accepted the title of Regent, and marched at the head of a large army against the invader, whom he compelled to retreat from the territories of Bucharia, and to abandon some of those countries, the possession of which he had at a former time usurped. From that time Beggee Jan became the

actual ruler of the Usbecks, although he never bore any other title than that of Regent, and continued to pay a nominal obedience to Abdool Ghâzee Khan, the nominal king.

It may seem strange that Beggee Jan should have chosen this process of acquiring the power which he might probably have taken, without much difficulty, as the heir of his father. But he knew that merely as the head of a tribe he should, in a station to which he could have no distinct claim, be exposed to the jealousy and opposition of other chiefs; whilst, as a religious mendicant, compelled by his countrymen to assume regal power, he should have no rival to fear, and would be able to establish his authority on a permanent basis. Therefore in his subsequent life he never lost sight of that character in which he had won "golden opinions" from his countrymen. In his regulations for the management of public affairs, he gave to each institution a shape consonant to his apparent situation; and in his private character the temptations which surround a throne had no power to divert him from the practice of that austerity and self-denial which had sanctified his cell. His perseverance in this conduct disarmed his enemies and attached his friends; and ultimately he came to be regarded with such reverence, bordering on adoration, that he found little difficulty in establishing a fabric of power—by the consolidation of the Usbeck tribes, and by victories and successful negociations—which even Persia contemplated with great and just apprehension.

Beggee Jan abolished the splendid court at which the nobles of Bucharia had been accustomed to attend, and in its place established what may be called a hall of justice, in which he sat as president, assisted by forty mollahs, or learned men. All who had complaints to make came to this hall; but the prosecutor was never allowed to speak unless the accused were present. No person, whatever might be his rank, dared neglect a summons to attend this court, before which even a slave might cite his master. Beggee Jan was accustomed to listen very patiently to the statements of both parties, and in all cases not criminal he sent them away with the advice to endeavour to settle the matter amicably between themselves. If they did so, the cause terminated; but if not, he took notes, at their re-appearance, of the evidence produced; and these were given, together with his opinion on the case, to the mollahs, who were directed to prepare a decision according to the holy law. The parties, even after this, had a week allowed them to accommodate their difference; but if they failed to do so, sentence was then passed, and became irrevocable. Criminal justice was administered according to the Koran. Daring robbers were punished with death; petty thieves by the loss of their right hands; drunkards were publicly whipped. Tobacco having come into use since the time of Mahomet, the Koran says nothing about it; but smoking is rather discountenanced by severe religionists, and Beggee Jan forbade it under severe penalties. From all classes in the city of Bucharia the strictest attention to the forms of religion was required: police officers were continually employed in driving the inhabitants to the mosques to hear the stated prayers; and they were authorized to use their whips to awaken the devotion of the negligent. These officers had also authority to interrogate the persons they met as to their knowledge of the proper prayers, and to inflict summary punishment on such as were found wanting. Of these proceedings we cannot form a proper estimate without recollecting that an attention to the stated prayers is an essential duty of daily life, the observance of which is made imperative upon a Moslem by the Koran, the directions of which have the force of public laws in every Mohammedan country.

The nominal monarch, Abdool Ghazee Khan, and his family, were supported from the produce of the royal estates. But Beggee Jan drew daily from the same fund from which he paid his soldiers, for the support of himself, his cook, his servant, and his tutor, the sum of one *tungâh* (about five pence) for each, being the amount of the stipend allowed to the poorest student. The wife of Beggee Jan, who was one of the royal family, was allowed only three *tungâhs*. This princess had a fortune of her own, which placed her above the necessity of receiving this pittance; but she took it nevertheless, in order to please her husband, who often told her that it was too much. "That which is actually necessary," he used to say to her, "is alone lawful;" and when she remonstrated, he was wont to add,—"Learn, lady, to be content with little, that thy God may be content with thee." Nevertheless the joy which he felt at the birth of a son induced him to abate the rigour of his domestic regulations. A sum of not less than £5 was allotted for the support of the mother and infant; and an equal amount was given for the support of two other sons the moment they were born. Gradually Beggee Jan showed his intention to educate his children in the enjoyment of the luxuries which, as for himself, he appeared to despise. He allowed his family to reside in a palace; while he himself occupied an unfurnished room, or rather cell, into which persons of all classes were admitted. He wore a coarse and filthy dress, while he was surrounded with splendour. On his death, his eldest son, Hyder Tûrrah, ascended the throne of Bucharia, and assumed the dignity as well as the name of a sovereign. See Sir John Malcom's History of Persia.

BEGHERME; a considerable country of Central Africa, to the south-east of the lake Tchad. The people wage almost perpetual war with Bornou, which boasts of having subjected them; but they always find a retreat beyond a considerable river, which flows through their country, whence they return, and regain possession of their territory. Their chief force consists in mounted lancers, who, with their horses, are cased in iron mail.

BELFRAGE, Henry, D. D., a much esteemed clergyman among the Scottish dissenters, was born on the 24th of March, 1774, at Falkirk, where his father was a minister of the Secession church. He was educated first at the grammar-school of his native town, and afterwards at the university of Edinburgh, to which he was removed in the thirteenth year of his age. His theological course commenced in 1789, and was pursued under the tuition of the Rev. John Brown of Haddington. Among those who attended the classes with him he formed many valuable friendships, which subsisted during life, and though in worldly circumstances, talents, and fame, he maintained a superiority over the most of those with whom he was thus connected, yet perhaps no friendships were ever more uninterrupted or more intimate. Soon after he was licensed to preach, he received calls from three congregations, and in the case of one of these, the proverb did not hold good that a prophet has no honour in his own country. His

father's congregation gave him a most hearty invitation to be the colleague and successor of their venerable pastor. But it never ceased to be true of Dr Belfrage, that he was best liked by those who knew him best. He was his father's colleague for four years, a circumstance which must have been of advantage to the young divine; for he was only twenty years of age when he was ordained. During the forty-one years he lived in the discharge of the duties of the ministerial office, he was an example of all blamelessness and of many excellencies. His congregation was large, and scattered over a considerable extent of country, yet every year he visited ministerially every member of it, and also had regular *diets* of catechising. The sick were never forgotten by him, especially if they were poor. His advice, his prayers, his purse, were never withheld on any proper occasion. From his father he inherited the estate of Coliston, in Kinrosshire, and perhaps seldom was property in the possession of one more qualified by nature and habit to make a proper use of it. To all that concerned the intellectual, moral, and religious improvement, and the temporal interests of his fellowmen, both rich and poor, he was ever willing to contribute time, labour, or money, as might be required.

As an author, Dr Belfrage has acquired considerable celebrity among the religious community, both of England and Scotland. Indeed, his name is fully as familiar to the dissenters and orthodox churchmen of the former country, as it is in the latter. His Life of Dr Waugh of London has gone through a number of editions. Most of his other works (which in a collected form make twelve vols.) are altogether of a practical nature; yet his exposition of the shorter catechism shows him to have been a master in the school of dogmatic theology. His Sacramental Discourses were among the earlier of his publications, and they still continue to enjoy a great popularity. It was in delivering such discourses that he appeared to most advantage as a public speaker. In 1824, without any solicitation on his part, but through the interference of his distant relative, the late Rev. Sir Henry Moncrief, he received the degree of D.D. from the university of St Andrews. He died on the 16th of December, 1835. A memoir of him has since been published by the Rev. John M'Kerrow and the Rev. John M'Farlane.

BELGIUM (*a.*). The present king of the Belgians, formerly prince Leopold of Saxe-Coburg, was born 16th Dec. 1790. In May 2, 1816, he married Charlotte, daughter of George IV, then prince regent, who died in child-bed, Nov. 6, 1817. Leopold was elected king of the Belgians, June 4, 1831; took the oath to the constitution, July 21, 1831, and married, August 9, 1832, Louise, daughter of Louis Philippe, king of the French, by whom he has had Leopold Louis Philip Maria Victor, prince royal, born April 9, 1835, and Philip Ferdinand Eugene George, born March 24, 1837. The government is a constitutional hereditary monarchy. The legislature is composed of a senate and chamber of representatives or deputies. The number of deputies is apportioned to the population, and cannot exceed the proportion of one deputy to 45,000 inhabitants, and the number of senators is equal to half the number of deputies. The deputies are elected for four years, and the senators for eight years. The chambers assemble by their own right, every year, on the second Tuesday of November, unless convoked earlier by the king. Belgium has four universities, two of which, those of Ghent and Liege, are supported by the government. The ancient university of Louvain is suppressed; but a new Catholic university, lately founded with the sanction of the pope, has been established there. The free university of Brussels is founded by private individuals. The great mass of the inhabitants are Catholic, the number of Protestants being only from 15,000 to 20,000; but all religions are tolerated. The Catholics are under the charge of one archbishop and five bishops. The salaries are paid out of the public treasury. The following table exhibits the population, electors, representatives, and senators of Belgium in 1835, including the grand-duchy of Luxemburg.

| Provinces. | Pop. | Electors. | Repres. | Senators. |
|---|---|---|---|---|
| Antwerp | 353,963 | 4440 | 9 | 4 |
| S. Brabant | 566 809 | 5889 | 14 | 7 |
| W. Flanders | 516,904 | 6608 | 15 | 8 |
| E. Flanders | 747,569 | 9606 | 18 | 9 |
| Hainault | 676,942 | 6327 | 15 | 8 |
| Liege | 380,189 | 3726 | 9 | 5 |
| Limburg | 326,737 | 3359 | 9 | 4 |
| Namur | 220,332 | 2960 | 5 | 3 |
| Luxemburg | 316,504 | 4934 | 8 | 4 |
| Total | 4,154,922 | 47,853 | 102 | 51 |

The superficial extent of Belgium is about 12,000 English square miles. Its vast continuous plains are covered with the finest pasturage and the richest harvests, traversed by excellent roads and deep canals, and strewed with flourishing villages, towns, and cities. In the most westerly provinces, and on the banks of the Meuse, vineyards are abundantly sprinkled on the hill-sides, and refresh the eye, fatigued with the monotony of the green fields in the plains; presenting thus, at one view, the mingled character of the valley of the Rhone, and the richest cantons of Normandy. Belgium, however, is not solely agricultural; she possesses beds of coal and iron mines, the former superior to any on the European continent. In the basin of Mons, for instance, we find from a hundred and ten to a hundred and twenty strata, or layers of coal, disposed one above another, all workable, and all wrought. The four principal collieries of Mons, Marimont, Liege and Charleroi, yield annually 3,200,000 tons of coal. Nor is Belgian industry less striking as regards iron than it is with respect to coal. It is remarkable, that, to this day, no attempt for the fabrication of iron after the English fashion—that is, by extracting it from the iron-stone or ore—has succeeded in France, though many districts abound in natural advantages for the purpose. In Belgium, on the contrary, the undertaking has been accompanied with the most marked success. In 1830, some capitalists at Charleroi erected a furnace, where they treated the mineral of the district with the coal which likewise exists there. From that time till this, establishment has followed establishment so rapidly, that, in the district of Charleroi alone, there are, at this day, twenty-five coke-furnaces in action, producing annually 75,000 tons of metal, without reckoning furnaces where wood is employed. In 1834, the iron produce of all France, from the combustible mineral as in Belgium, amounted only to 47,000 tons; the French castings in the same year, of every kind, amounted in whole to 269,000 tons. So rich in iron and coal, Belgium could not fail to have flourishing manufactures; the woollen stuffs of Verviers, and the flaxen goods of Flanders, are familiar to the world.

The Belgians follow out their manufacturing and mining pursuits with boldness and energy. Six hundred feet was not long ago reckoned an extraordinary depth to push a mine down into the earth; recently, the Belgian miners have penetrated above thirteen hundred feet. The Belgians are busy raising structures for manufacturing industry, such as fabrics for the reception of furnaces, plating or boring machines, or forges. The establishment of Seraing, near Liege, extends, in regular buildings, for three quarters of an English mile. On the side opposite the Meuse are situated the mines, from which issue the mountains of coal, to be converted into coke. Next to these are the great round towers, sixty feet high, and fortified with iron, from the mouths of which flames are continually darted as from a crater. One of these furnaces has been in action for several years, and during that time there have been thrown into it, each day, nearly one hundred thousand killogrammes of materials. The numerous other buildings attached to this establishment are filled with steam-engines, forges, refining places, &c. Almost ere the manufactured iron be cold, it is delivered over to artizans, who make from it machines and tools of all possible kinds, and, above all, rails for railways. The whole neighbourhood of this establishment is traversed by railroads and canals. The workmen at Seraing are three thousand in number.

On the 1st of May 1834, a law to the following effect was promulgated by the Belgian government:—

"Article 1. There will be established a system or chain of railways, having Malines for a centre point, and stretching to the eastward toward the Prussian frontier by Louvain, Liege, and Verviers —to the north as far as Antwerp—to the west as far as Ostend, by Termond, Ghent, and Bruges—and to the south by Brussels, and towards the frontiers of France through Hainault.

"2. The railways will be executed at the public charge, and under the direction of the government."

The line from Antwerp to Brussels is completed. The revenue derived from it has exceeded the highest expectations. It is supposed the eastern, western, and northern lines, the aggregate length of which is 222 English miles, will be finished at an expense of forty-five millions of francs, £1,875,000 sterling. The proportionate expense per mile must, of course, vary according to the difficulties or facilities of the ground. That portion of the line which extends between Brussels and Antwerp, a distance of thirty-three miles, passes over ground naturally level, and cost £4350 a mile. More inaccessible districts will cost much more than this; but it may be questioned whether any part of the Belgian railways will approach near to the expense of the line between Paris and St Germains, which is estimated at above £24,000 sterling per mile. The abundance of iron in Belgium renders all public works of this kind comparatively cheap. In addition to the 222 miles of railway first projected, nearly 100 miles additional have been subsequently resolved upon, in order to perfect the internal intercourse of the country.

The *farms in Belgium* very rarely exceed a 100 acres. The number containing fifty acres is not great. . Those of thirty and twenty acres are more numerous, but the number of holdings of from five to ten, fifteen, and twenty acres is very considerable, especially those of the smaller extent. The small farms of Belgium closely resemble the small holdings in Ireland; but the small Irish cultivator exists in a state of miserable privation of the common comforts and conveniences of civilized life, whilst the Belgian peasant farmer enjoys a large portion of those comforts. The houses of the small cultivators in Belgium are generally substantially built and in good repair: they have commonly a sleeping-room in the attic, and closets for beds connected with the lower apartment, which is convenient in size. A small cellarage for the dairy, and store for the grain, as well as an oven, and an outhouse for the potatoes, with a roomy cattle-stall, piggery, and poultry-loft. The house gen erally contains decent furniture, the bedding sufficient in quantity; and although the scrupulous cleanliness of the Dutch may not be everywhere observable, an air of comfort and propriety pervades the whole establishment. In the cowhouse the cattle are supplied with straw for bedding; the dung and urine are carefully collected in the tank; the ditches are scoured to collect materials for manure; the dry leaves, potato-tops, &c. are collected in a moist ditch to undergo the process of fermentation, and heaps of compost are in course of preparation. The premises are kept in neat and compact order, and a scrupulous attention to a most rigid economy is everywhere apparent. The family are decently clad, none of them being ragged or slovenly, even when their dress consists of the coarsest material. The men universally wear the blouse, and wooden shoes are in common use by both sexes. The diet consists to a large extent of rye bread and milk; the dinner being usually composed of a mess of potatoes and onions, with the occasional addition of some pounded ham or slices of bacon.

The contrast of the mode of living here described, with the state of the same class of persons in Ireland, is striking; and it appears important to investigate the causes of this difference.

In the greater part of the flat country of Belgium the soil is light and sandy, and easily worked; but its productive powers are certainly inferior to the general soil of Ireland, and the climate does not appear to be superior. To the soil and the climate, therefore, the Belgian does not owe his superiority in comfort and position over the Irish cultivator. The difference is rather to be found in the system of cultivation pursued by the small farmers of Belgium, and in the habits of economy and forethought of the people. The cultivation of the small farms in Belgium differs from the Irish—1st. in the quantity of stall-fed stock which is kept, and by which a supply of manure is regularly secured; 2nd. in the strict attention paid to the collecting of manure, which is most skilfully managed; 3rd. by the adoption of a system of rotation of five, six, or seven successive crops, even on the smallest farms, which is in striking contrast with the plan of cropping and fallowing the land prevalent in Ireland. In the farms of six acres no plough, horse, or cart is required; the only agricultural implement, besides the spade, fork, and wheelbarrow, being a light wooden harrow, which might be dragged by hand. The farmer has no assistance besides that of his wife and children, excepting sometimes in harvest, when he occasionally obtains the aid of a neighbour, or hires a labourer at a franc per day. The whole of the land is dug with the spade, and trenched very deep; but as the soil is light, the labour of digging is not great. The stock on the

small farms consists generally of a couple of cows, a calf or two, one or two pigs, sometimes a goat or two, and some poultry. The cows are altogether stall-fed, on straw, turnips, clover, rye, vetches, carrots, potatoes, and a kind of soup made by boiling up potatoes, peas, beans, bran, cut hay, &c., into one mess, and which being given warm, is said to be very wholesome, and to promote the secretion of milk. In some districts the grains of the breweries and distilleries are used for the cattle.

The success of the Belgian farmer depends mainly upon the number of cattle which he can maintain by the produce of his land, the general lightness of the soil rendering the constant application of manure absolutely necessary to the production of a crop. The attention of the cultivator is always therefore especially directed to obtain a supply of manure. Some small farmers, with this view, agree with a sheep-dealer to find stall-room and straw for his sheep, to attend to them, and to furnish fodder at the market price, on condition of retaining the dung. The small farmer collects in his stable, in a fosse lined with brick, the dung and urine of his cattle. He buys sufficient lime to mingle with the scourings of his ditches, and with the decayed leaves, potato-tops, &c., which he is careful to collect in order to enrich his compost, which is dug over two or three times in the course of the winter. No portion of the farm is allowed to lie fallow, but it is divided into six or seven small plots, on each of which a system of rotation is adopted; and thus, with the aid of manure, the powers of the soil are maintained unexhausted, in a state of constant activity. The order of succession in the crops is various; but plots are appropriated to potatoes, wheat, barley, clover (which had been sown with the preceding year's barley), flax, rye, carrots, turnips or parsnips, vetches, and rye for immediate use as green food for the cattle. The flax grown is heckled and spun by the farmer's wife, chiefly during the winter, and about three weeks' labour at the loom towards the spring weaves into cloth all the thread thus prepared. The weavers are generally a distinct class from the small farmers, though the labourers chiefly supported by the loom commonly occupy about an acre of land, sometimes more, their labour upon the land alternating with their work at the loom. In some districts, every gradation in the extent of occupancy, from a quarter or half an acre, to the six-acre farm, is to be found; and in such cases more work is done in the loom by the smaller occupiers.

The labour of the field, the management of the cattle, the preparation of manure, the regulating the rotation of crops, and the necessity of carrying a certain portion of the produce to market, call for the constant exercise of industry, skill, and foresight among the Belgian peasant farmers; and to these qualities they add a rigid economy, habitual sobriety, and a contented spirit, which finds its chief gratification beneath the domestic roof, from which the father of the family rarely wanders in search of excitement abroad. There is no tendency to the subdivision of the small holdings. The provident habits of the farmers enable them to maintain a high standard of comfort, and is necessarily opposed to such subdivision. Their marriages are not contracted so early as in Ireland, and the consequent struggle for subsistence among their offspring does not exist. The proprietors of the soil retain the free and unrestricted disposal of their property, whether divided into smaller or larger holdings. The common rent of land is about 20s. an acre, and the usual rate of wages for a day labourer is a franc (or 10d.) a day. See "Third Report of George Nichols, Esq. containing the Result of an Inquiry into the condition of the labouring classes in Holland and Belgium."

BELL, Andrew, D. D. LL.D., prebendary of Westminster, master of Sherborn hospital, Durham, fellow of the Asiatic Society and the Royal Society of Edinburgh; the founder of the Madras system of education, was born at St Andrew's in the year 1753, and was educated in the university of that place. The whole of the early part of his life (a portion of which was spent in America,) was distinguished by the exemplary manner in which he fulfilled every public and private duty. In the year 1789, after his appointment as chaplain to Fort St George, and minister of St Mary's, at Madras, the splendid qualities of his mind were first developed. Since that period, he has been regarded as one of the greatest benefactors of mankind. He undertook the gratuitous superintendence of the Military Male Orphan Asylum, at that station, until 1796, during which time he founded the Madras system of elementary education; and although the rival claims of Mr Lancaster then came into notice, it is but justice to add, that the universal judgment of the country, and the testimony of authentic documents, pronounced the merit of the discovery to have been solely and exclusively due to Dr Bell. No sooner were the advantages of the system known, than it was patronised by the government of Fort St George; and on the Rev. Doctor's arrival in this country in 1797, the original report was immediately published, and submitted to the highest authorities in church and state, by whom the system was patronised, and found to work so well in practice that it has since been adopted in every civilised nation in the world. In Great Britain alone there are, at the present time, "ten thousand schools, without any legislative assistance, wherein six hundred thousand children are educated by voluntary aid and charity." The most gratifying testimonials were transmitted to the Doctor in proof of the excellence of his plan, not only from the highest quarters in this country, but from several governments and learned bodies in Europe, Asia, and America; while the improvement in the morality, civilization, and piety of the lower classes, during the present and future generations, will have acquired its chief impulse from the labours of Dr Bell. The evening of his pious and useful life was passed in Cheltenham, where his benevolence and the practice of every social and domestic virtue had gained him the affection and respect of every class of the community. His death took place there, Jan. 27, 1832. He distributed no less a sum than £120,000 to various national institutions and public charities. To his native city of St Andrews, he left £10,000, besides a sum of £50,000, for building and endowing a new college there. Many valuable works on education were written by him, amongst which "The Elements of Tuition," "The English School," and "Brief Manual of Mutual Instruction and Moral Discipline," will ever occupy a distinguished place in our useful national literature.

The committee of the national society for the education of the poor, passed the following resolution at its first meeting after Dr Bell's decease:

"Resolved—That the committee, having learned that it has pleased Almighty God to remove from this present life the Reverend Dr Bell, the superintendent of the society's schools, deem it incumbent upon them to pay a public mark of respect to the memory of a man who may justly be regarded as the founder of a system of education which, under the Divine blessing, has been productive of incalculable benefits to this church and nation; and that, as it is understood that his remains are to be interred in Westminster Abbey, the secretary be directed to ascertain the day fixed for his interment, and communicate the same to the committee for the information of such members as may find it convenient to attend."

The remains of Dr Bell arrived in London from Cheltenham on the 11th of February. Having remained for three days at No. 18, Berkeley Square, they were deposited in Westminster Abbey on the 14th, the funeral procession, consisting of ten mourning-coaches, and twenty-six private carriages, among which were those of the archbishop of Canterbury, the earls of Shaftesbury, Eldon, and Amherst; the bishops of Lichfield and Coventry, Bristol, Chichester, and Llandaff; lords Kenyon and Wynford; the hon. Mr Justice Park; Sir James Langham; the Rev. archdeacons Cambridge, Watson, &c.

BELL, JOHN, an eminent English lawyer, was a native of Cumberland. He was educated at Trinity college, Cambridge, where he became fellow; he was the senior wrangler and first Smith's prizeman of the year 1786, and proceeded M.A. in 1789. He was called to the bar by the hon. society of Gray's Inn, Feb. 1, 1792, and was nominated a King's counsel in Easter Term 1816. For many years he was the most distinguished ornament of the Chancery bar, and held the highest rank in his profession for profound learning and eminent acuteness. He was a Whig in politics, but never courted or received any favour at the hands of his party. He retained throughout his whole professional career his native Cumberland dialect in all its unalloyed and broad provincialism; and, in addition to the disadvantages arising from that circumstance, he had to contend with some physical defect in his utterance, speaking with great hesitation, repeating his words and stuttering in such a manner that it was really painful to listen to him. The proceedings in the Chancery courts are, as our readers are generally aware, carried on in a very quiet conversation-like manner. The advocate seldom aims at eloquence. To tell a plain tale in a plain manner is all that is attempted. Even that was beyond the power of John Bell. And yet, with all these defects, such was the reputation he acquired for sound discretion and solidity of judgment, that he managed to maintain a very high rank at the English bar at a time when it was adorned by such men as Sir Samuel Romilly, Sir William Grant, and Sir John Leach. Probably there never was a more extraordinary instance of superiority of intellect making itself known and appreciated, in spite of obstacles which would generally be thought, and indeed be found altogether invincible, than the one exhibited by Mr Bell.

George the Fourth, while prince regent, is related to have asked the lord chancellor (Eldon), Who was considered at that time the greatest lawyer?—to which the chancellor is reported to have replied, "Please your royal highness, the greatest lawyer we have at this time is a gentleman who can neither read, write, walk, nor talk." And if the words are to be understood with reference to doing any one of these things *well*, they are true to the very letter.

He laboured from his infancy under a distortion of one of his feet, which made walking a painful operation. Another singularity attached to him was, the extraordinary illegibleness of his handwriting; so that, though his opinions were more sought for than those of any man of his time, it frequently happened that his clients were obliged to resort to himself or his clerk to decypher them. In reference to this defect he used facetiously to say, when asked what sort of a hand he thought he really wrote, that he had three sorts—one that he himself could read—one that his clerk could read, —and one that neither he nor his clerk could read. It certainly was most extraordinary writing—paralleled only by the late Dr Parr's hieroglyphics.

Out of court he was a very good-tempered and affable man, easily accessible, painstaking, and laborious; in court he very frequently obtained advantage over more brilliant and showy opponents by the exactness with which he was accustomed to make himself acquainted with the facts of his cases, and his skill in bringing forward analogous cases which had been previously decided. The application of cases was indeed his great *forte*, and in that respect, perhaps, no man was ever more skilful.

In person he was a little man, stout, and round-shouldered; with a very prominent mouth and large teeth.

Mr Bell retired many years ago from the Chancery bar, but he lent his aid to the Chancery law commissioners. He died on the 6th Feb. 1836. He is supposed to have acquired a princely fortune by his professional labours, which devolves upon a widow and only son. His will was proved at Doctors' Commons, and the personalty sworn under £80,000.

BELPER; a market-town in Derbyshire, situated in a valley through which flows the river Derwent, 134 miles N. N. W. from London, and 54 S. E. from Manchester. Till the year 1777, Belper was an inconsiderable village, inhabited principally by nailers, whose articles are still in considerable demand from the superior quality of the rod-iron made at Alderwasley, four miles distant, which is supposed to arise from something peculiar in the nature of the coal used there. The town has risen into importance since the establishment of the cotton-mills of Messrs Strutt. These are now several in number, besides which, there are a bleaching-mill and a manufactory of machinery connected with the works of Messrs Strutt. Upwards of four thousand persons, chiefly residing in the neighbouring village, receive employment here in a factory for silk and cotton hose, said to be one of the largest establishments of the kind in the kingdom. The North Midland railway passes this town; the Cromford canal passes within two miles, and the High Peak railway within six. Saturday is market-day, and fairs for horned cattle, sheep, and horses are held on May 12th and Oct. 31st. At the north end of the town a stone bridge of three arches bestrides the Derwent, near which is a beautiful wear for working the mills of Messrs Strutt. A new church and several dissenting places of worship have been built in this town within the last twenty years. Population in 1831, 7890; in 1841, 9885.

BELTURBET; a market-town in the county of Cavan, province of Ulster, Ireland, situated on the river Erne, on the road from Cavan to Ballyconnell, 67 miles N. W. from Dublin. The town is irregularly built. A very extensive distillery was erected here in 1825, by Messrs Dickson, Dunlop, and Co., which employs a number of persons. There are also some malting establishments. A troop of cavalry is generally stationed here. Population in 1831, 2026; in 1841, 2070.

BENSLEY, Thomas, an eminent English printer, was the son of a printer in the neigbourhood of the Strand, where Mr Bensley was first established; but he afterwards removed to Bolt Court, Fleet Street, where he succeeded Mr Edward Allen, the "dear friend" of Dr Johnson, who died in 1780. Mr Allen's office was next door to Dr Johnson's dwelling-house, which ultimately became part of Mr Bensley's printing office. Mr Bensley's skill as a practical printer was not inferior to that of his great contemporary Mr Bulmer. Whilst Mr Bulmer astonished the public with his magnificent edition of Boydell's Shakespeare, Mr Bensley produced a rival production in Macklin's Bible. To use the words of Dr Dibdin: "While the Shakespeare Gallery and the Shakespeare press were laying such fast hold of the tongues and the purses of the public, a noble spirit of rivalry was evinced by the Macklins of Fleet-street; Reynolds, West, Opie, Fuseli, Northcote, Hamilton, and others, were engaged to exercise their magic pencils in the decoration of what was called the *Poet's Gallery;* and among other specimens of this national splendour and patriotism came forth an edition of Thomson's Seasons in 1797, in royal folio, from the press of Mr Bensley, a volume quite worthy of the warmest eulogies. It had also the merit of not being debased by second-rate engravings. Meanwhile the pencil of Loutherbourg was called into requisition to supply, in particular, head and tail pieces, or vignettes, for the sumptuous edition of the Bible; and that sacred book, in seven broad folio tomes, came regularly before the public, with every fascination of which a bold type (cast by Joseph Jackson), raven-glossy ink, and Whatman's manufactured paper, could bestow upon it." The Bible of Macklin wanted, however, the Apocrypha; and about 1815 this desideratum was supplied, in the same manner, from the same press, at the expense of Messrs Cadell and Davies, but the passion for such splendid publications had evidently passed away, as Messrs Cadell and Davies experienced to their great loss. Dr Dibdin thus continues: "Hume's History of England followed hard upon the Bible, in ten volumes of a folio form, of better proportion. The engravings which adorn this magnificent work were executed from the paintings in the fore-mentioned Gallery; and upon the whole I am not sure (probably from the uniform appearance of the solid body of the text, compared with the same in the Bible, divided into columns and broken into verses,) whether this latter work has not greater admirers than its predecessor. The medallic and emblematical engravings in it are, many of them, quite admirable." Among other splendid works printed by Mr Bensley may be enumerated the following, in nearly a chronological order, as particularly deserving of commendation on account of the beauty of their execution: —Lavater's Physiognomy, 5 vols. 4to. 1789. The Gentle Shepherd and Allan Ramsay, in English and Scotch, 8vo. 1790. Salmagundi, by Mr Huddesford, 4to. 1791. Wyntown's Originale Cronykil of Scotland, 8vo. 1795. The Gardeners, translated from De Lille, 4to. 1798. The Sovereign, a Poem; addressed to his Imperial Majesty of all the Russias, by Charles Small Pybus, Esq., with the author's portrait prefixed. The hero of this poem, as immediately afterwards appeared, was most unfortunately chosen. It is erroneously attributed by Dr Dibdin to Sir James Bland Burgess. He says of it: "If the Emperor Paul had afterwards 'cut as good a figure' as this beautifully printed book will always continue to do, he might have been master of all the Russias. Mr Bensley has probably never gone beyond this volume in his typographical achievements." Enchanted Plants, tables in verse, 8vo. 1800. Dulau's Virgil, 8vo. 2 vols. Festival of the Rose, 4to. 1802. Astle's Origin of Writing, 4to. 1803. Hume's History of England, 1803, 10 vols. Shakspeare, 7 vols. 1803. The Shipwreck, 1804; published by Mr Miller. An edition of Junius, 1804, 2 vols. Du Roveray's edition of Pope's Works, and Pope's Homer's Iliad, 1805. Smith's Antiquities of Westminster, 1807, 4to. On the 5th of November 1807, a fire broke out in Mr Bensley's warehouses, supposed to have been occasioned by boys letting off fire-works, which destroyed 700 copies of Mr Smith's Westminster, a splendid 4to edition of Thomson's Seasons, a fine edition of Juvenal, another of Pope's Works, many copies of Edwards's Guide to Brighton, and other works. But as the printing office was not much injured, Mr Bensley's labours at the press were not materially impeded.*

The next works we shall notice are Religious Emblems, 1809, 4to.; Riddell's History of Mountains, 1809, 4to. 3 vols.; Dallaway's Sussex, 4to. 1815 and 1819; Singer's History of Playing Cards, &c. 1816, 4to.; and Fairfax's Tasso, 1817, 8vo. Dr Dibdin notices, with high commendation, many of the peculiarities of each of the above splendid productions. See *Bibliographical Decameron*, vol. ii. pp. 397—401, and closes his account with a very correct portrait of Mr Bensley.

It would have been well for Mr Bensley's peace of mind if he had confined his attention to his old presses, and to *fine* printing, in which he so much excelled. But, in an evil hour, he was induced to embark his fortune in the establishment of the *Printing Machine* invented by Mr Kœnig, (which was first used in this country in printing the Times newspaper, on the 29th of November 1814.) Mr Bensley adapted the machine to the printing of books; and after great toil, much trouble, and very heavy expenses, Mr Bensley succeeded in printing both sides of the sheet by the same operation. But he had scarcely brought his exertions to a successful issue, before a second unfortunate and very rapid fire, June 26, 1819, again destroyed his warehouses and printing office, with their valuable con-

* On the subsequent repair and enlargement of Mr Bensley's premises, the interior of the residence of Dr Johnson was taken into them; but the front remained unaltered. It is engraved in the European Magazine for May 1810-11; and more elegantly in the "Graphic Illustrations of the Life and Times of Dr Johnson," just published by Mr Murray. Bishop Jebb, writing to A. Knox, Esq., June 10, 1815, says, "I was t'other evening in Sam Johnson's house, in the apartment where he breathed his last, in Bolt Court—You may judge with what reverence! The premises are now partly bare rooms, partly a printing office in the occupation of Mr Bensley, forming but a minute part of his vast concerns. I could not help comparing the palace of the printer with the humble dwelling of the sage; and then asking myself how poor a thing is pelf! how unworthy of our care and competition!" At a subsequent period, June, 1819, this house was totally destroyed.

tents. The elaborate machinery for steam-printing was, however, not materially injured, and the printing office was soon rebuilt. But the cumbrous machine, on which so much had been expended, was in a great measure superseded by later and simpler inventions by Mr Applegath and others; and after a time Mr Bensley parted with this printing office in Bolt Court, and retired from steam printing; and although he afterwards connected himself with a minor establishment in Crane Court, Fleet Street, resided chiefly at Clapham Rise, where he died on the 11th Sept. 1835.

BENTHAM, JEREMY (*a*), was the eldest son of Mr Jeremiah Bentham, attorney; and was born at his father's house, in Red Lion Street, Houndsditch, adjacent to Aldgate church, February 15th (old style) 1747–8. His grandfather, who had followed the same profession, and had occupied the same two houses in the city and at Barking, was clerk to the company of scriveners. The name of Jeremy was derived from an ancestor, Sir Jeremy Snow, a banker in the reign of Charles II. The late General Sir Samuel Bentham, of the Russian service, who died April 30, 1831, was his brother. His father married, secondly, Sarah, widow of the Rev. John Abbot, D. D., Rector of All Saints, Colchester, and mother of the late Lord Colchester. She died September 27, 1809, and was buried in Westminster Abbey. About the year 1765, Mr Jeremiah Bentham purchased the house in Queen's Square Place, Westminster, where he and his son both passed the remainder of their lives. It had previously been the residence of the notorious courtesan, Theresa Constantia Philips, author of "Memoirs," in 3 vols. 1761.

Mr Bentham's talents developed themselves early. Soon after he was three years of age he read Rapin's History of England as an amusement; and at seven he read Télémaque in French. At eight he played the violin,—an instrument on which, at a subsequent period of his life, he became remarkably proficient. He was very distinguished at Westminster School. During one of the vacations, he read Helvetius's celebrated work on the Mind; from which he first obtained a glimpse of that principle, which at a subsequent period he so powerfully developed. At the age of thirteen he was admitted a member of Queen's College, Oxford, where he at once engaged in public disputations in the common hall, and excited, by the acuteness of his observations, the precision of his terms, and the logical correctness of his inductions, the surprise and admiration of all who heard him. At the age of sixteen he took his degree of A. B., and at the age of twenty that of A. M., being the youngest graduate that had at that time been known at either of the Universities. He afterwards entered at Lincoln's Inn, of which society he became a bencher in 1817.

From early childhood, such was the contemplative turn of his mind, and the clearness and accuracy with which he observed whatever came under his notice, that at the age of five years he had already acquired the name of "the Philosopher," being familiarly called so by the members of his family; and such, even in his youth, were the indications of that benevolence to which his manhood and his old age were consecrated, that a celebrated statesman, who at that period had conceived an affection for him, and with whom he spent much of his time after he was called to the bar, speaks of him, in a letter to his father, in these remarkable words:—"His disinterestedness, and his originality of character, refresh me as much as the country air does a London physician."

Many incidents of his early life mark the extent of his connection with the last century. He was accustomed to relate with great pleasure, that, when he was a boy, he was taken to drink tea with Hogarth, whose works he greatly admired. He was one of the class who attended the lectures of Sir William Blackstone, when they were delivered at Oxford; and young as the mind of Bentham was, it even then revolted at the reasoning of the professor. As a law student, he took notes of the speeches of Mansfield; and he was a member of the club ruled by Johnson, whom he never liked, considering him to be a gloomy misanthropist.

Mr Bentham entered upon his profession with a prospect amounting almost to a certainty of the highest success. His father's practice and influence as a solicitor were considerable, and his (the son's) draughts of bills in equity were at once distinguished for their superior execution. In one of his pamphlets ("Indications respecting Lord Eldon") Mr Bentham thus notices the circumstances which led to his retirement from the bar:—

"By the command of a father, I entered into the profession, and, in the year 1772, or thereabouts, was called to the bar. Not long after, having drawn a bill in equity, I had to defend it against exceptions before a master in chancery. 'We shall have to attend on such a day,' said the solicitor to me, naming a day a week or so distant; 'warrants for our attendance will be taken out for two intervening days; but it is not customary to attend before the third.' What I learnt afterward was—that though no attendance more than *one* was ever bestowed, *three* were on every occasion regularly charged for; for each of the two falsely pretended attendances, the client being by the solicitor charged with a fee for himself, as also with a fee of 6s. 8d. paid by him to the master: the consequence was—that for every attendance, the master, instead of 6s. 8d., received £1; and that, even if inclined, no solicitor durst omit taking out the three warrants instead of one, for fear of the not-to-be-hazarded displeasure of that subordinate judge and his superiors. True it is, the solicitor is not under any *obligation* thus to charge his client for work not done. He is however, sure of *indemnity* in doing so: it is accordingly done of course. * * * * These things, and others of the same complexion, in such immense abundance, determined me to quit the profession; and, as soon as I could obtain my father's permission, I did so: I found it more to my taste to endeavour, as I have been doing ever since, to put an end to them, than to profit by them."

Between Mr Bentham's coming of age, and the commencement of the French Revolution—a period of nearly twenty years—he was thrice on the continent, and every time resided chiefly in Paris. In his second visit to the Gallic capital, he formed an acquaintance with the celebrated but unfortunate Brissot, then better known by the name of Wanville.

There were several strong points of resemblance between Brissot and Bentham, which will account for the warmth of their friendship; added to which, the aspect of the times gave occasion, first to a correspondence, and afterwards to a residence with each other, which tended much to strengthen their

mutual attachment. It is well known that some few years before the French Revolution, Brissot fixed his abode in London, in prosecution of a design of conducting a periodical, entitled "A Universal Correspondence on Points interesting to the Welfare of Man and of Society." London was chosen as the centre, where information was to be collected from all points, and from which he could diffuse it in all directions through the medium of his publication. In this way, Brissot thought it possible to evade the restriction upon the press in France, and to illuminate that country by means of the more elastic press of England. The design, however, failed; and the cost of the experiment subjected Brissot to an arrest in London, from which he was freed by the generosity of a friend, generally supposed to be Mr Bentham. When Brissot returned to Paris, and rose into popularity, he testified his gratitude to Mr Bentham, by nominating him, without his consent or knowledge, a member of the second national assembly.

Between the years 1784 and 1788, Mr Bentham took an extensive European tour. Leaving France by way of Montpellier, Marseilles, and Antibes, he sailed to Genoa, and thence to Leghorn. From Leghorn he passed with letters of introduction to Florence, and spent several days in the hospitable mansion of the late Sir Horace Mann, who had been for some years the British envoy in that city. From Leghorn he resolved upon a passage to Smyrna, in a vessel owned and commanded by a captain with whom he had previously formed an intimate friendship in London. In the voyage, a storm drove the ship into a narrow strait, near the island of Mitelene, where she passed the night, and where, in the morning, he obtained a full view of the beautiful but ill-fated isle of Scio. Mr Bentham stayed three weeks at Smyrna, and thence proceeded in a Turkish ship to Constantinople, where he remained about double that time. His ultimate destination was Crechoff, in Russia, where his brother, Sir Samuel Bentham, was quartered as commandant of an independent battalion of a thousand men, and in which neighbourhood was the estate of the prime minister of Russia, Prince Potemkin. Mr Bentham reached his brother's house in the beginning of the year 1786; but, unfortunately, the latter was on an excursion to Cherson, where he was detained for the defence of the country against the threatened invasion of the Capitan Pacha. With characteristic industry, Mr Bentham sat down in his absent brother's study, and wrote his "Letters on the Usury Laws." There, also, he wrote the first portion of his "Panopticon." After above three years' absence he returned home, through Poland, Germany, and the United Provinces, in February, 1788.

The death of his father, in 1792, left Mr Bentham with a moderate fortune, and the free choice of his course of life; when he wholly abandoned all prospect of professional emoluments and honours, and devoted himself entirely to the composition of his laborious and valuable works.

Availing himself of the truce of Amiens, Mr Bentham again visited Paris, in 1802, accompanied by Sir Samuel Romilly. At that very time M. Dumont was publishing Mr Bentham's works in French. This circumstance considerably aided the purpose of his Parisian friends in electing him a member of the French institute, to which he was eligible in consequence of the citizenship of France having previously been conferred upon him. When it is remembered that only three vacancies existed, and that one was reserved for the nomination of Bonaparte, then first consul of France, Mr Bentham's election must be considered as no slight proof of the estimation in which he was held by the savans of Paris. Nor were the circumstances which attended his last visit to the French capital, in 1825, when he went for the benefit of his health, less flattering. He was received with the greatest enthusiasm; and on casually visiting one of the supreme courts, the whole body of the advocates rose and paid him the highest marks of respect, and the court invited him to the seat of honour.

The qualities which, in youth, formed the charm of Mr Bentham's character, and which grew with his growth and strengthened with his strength, were truth and simplicity. Truth was deeply founded in his nature as a principle; it was devotedly pursued in his life as an object; it exercised, as we have seen, even in early life, an extraordinary influence over the operations of his mind and the affections of his heart; and it was the source of that moral boldness, energy, and consistency, for which, from the period of manhood to the close of life, he was so distinguished. There was nothing in the entire range of physical, moral, or legislative science; nothing whatever relating to any class of subjects that could be presented to his understanding; nothing, however difficult other men thought it, or pretended to think it, or with whatever superstitious, political, or religious reverence and awe they regarded, or affected to regard it; which he did not approach without fear; to the very bottom of which he did not endeavour to penetrate; the mystery regarding which he did not strive to clear away; the real, the whole truth of which, he did not aim to bring to light. Nor was there any consideration, whether of a personal nature or not, that could induce him to conceal any conclusion at which he had arrived, and of the correctness of which he was satisfied: even though, by the desertion of friends and the clamour of foes, the very cause he advocated might to some have appeared to be endangered by his so doing. It was not possible to apply his principle to all the points and bearings of all the subjects included in the difficult and contested field of legislation, government, and morals; to apply it as he applied it, acutely, searchingly, profoundly, unflinchingly, without consequences at first view startling, if not appalling, even to strong minds and stout hearts. They startled not, they appalled not him, mind or heart. He had confidence in his guide; he was satisfied that he might go with unfaltering step wherever it led; and with unfaltering step he did go wherever it led. Hence his singleness of purpose; hence, in all his voluminous writings, in all the multiplicity of subjects which have come under his investigation, as well those which he has exhausted, as those which he has merely touched; as well those which are uncomplicated by sinister interests and the prejudices which grow out of them, as those which are associated with innumerable false judgments and wrong affections: hence, in regard to not one of them does a single case occur in which he has swerved from his principle, or faltered, or so much as shown the slightest indication of faltering, in the application of it.

He was capable of great severity and continuity of mental labour. For upwards of half a century he devoted seldom less than eight, often ten, and occasionally twelve hours of every day, to intense

study. This was the more remarkable, as his physical constitution was by no means strong. His health, during the periods of childhood, youth, and adolescence, was infirm; it was not until the age of manhood that it acquired some degree of vigour: but that vigour increased with advancing age; so that during the space of sixty years he never laboured under any serious malady, and rarely suffered even from slight indisposition; at the age of eighty-four he looked no older, and constitutionally was not older, than most men are at sixty; thus adding another illustrious name to the splendid catalogue which establishes the fact, that severe and constant mental labour is not incompatible with health and longevity, but conducive to both, provided the mind be unanxious and the habits temperate.

Mr Bentham's death took place at his house in Queen's Square Place, Westminster, on the 6th of June, 1832. He was in the eighty-fifth year of his age.

Mr Bentham's body was in consequence of his own earnest desire, transferred to the Webb street school of anatomy and medicine; at which place Dr Southwood Smith delivered an admirable lecture over it, on the 9th of June, 1832. A collected edition of his works has been published by Dr Bowring.

BERNADOTTE. [Although Charles XIV., king of Sweden, has not yet (1839) paid the debt of nature, we are still induced to give here, under his family name, a sketch of his remarkable life, as reference has been made to it in the body of the work, and as, independently of that, his career may be considered, at his great age, as, in effect, closed, so far as the purposes of history are concerned.]

Jean Baptiste Julien Bernadotte was born at Pau, in the south of France, on the 26th of January 1763. His father was a lawyer, and it was his desire to have brought up his son in the same business; but the young man, when only fifteen years of age, forsook the paternal care and roof, and enlisted as a private in the regiment of royal marines. During the war which followed between Great Britain and France, on account of the support granted by the latter to the revolt of the American colonies, Bernadotte served in the East Indies; and at so tender an age had he learnt to distinguish himself, that, a year after his enlistment, he was made a corporal, and upon the return of his corps to France in 1783, he was promoted to the rank of sergeant. He remained in this position until 1789, when a very daring and magnanimous act raised him at once in rank and in general estimation. In that year the royal marines were stationed at Marseilles, where, it is well known, the revolutionary spirit ran to a great height in the very earliest periods of the disturbances in France. The mob of the town having risen tumultuously, and drawn into the movement most of the soldiers stationed there, with loud shouts expressed their determination to take the life of the Marquis d'Ambert, colonel of the royal marines, to whose house they directed their steps. Bernadotte attempted to arrest their progress by an exhortation to humanity and forbearance, but such an appeal, in their phrensied state, was quite unavailing, and they compelled Bernadotte himself to join them, proclaiming that they had nominated him colonel of the marines in place of their intended victim. But the determined serjeant was not to be won by so brilliant an offer and having drawn off a few of his own men, whom he recalled to a sense of their duty, he suddenly planted himself between the mob and the marquis's house, and thus addressed them: "People of Marseilles, as you express confidence in me, I will show you I deserve it. I will not allow you to dishonour yourselves by a base assassination. If the colonel be guilty, the law is the executioner, not citizens and soldiers. I request you, then, to retire, as, before you obtain the head of the colonel, you must deprive me, and the brave men who surround me, of ours!" This manly declaration caused the infuriated mob to pause, and, seeing the firm resolution of the young serjeant, ultimately to desist from their purpose.

After this period, Bernadotte for a short time quitted the army for a civil post. He was appointed clerk to the parliament of Pau, his native town, and, upon the establishment of the national guards, he became adjutant of those of Pau. Even in this provincial sphere, he had opportunities of evincing his courage and talents, and spreading the reputation of his name, for, in 1793, he received the colonelcy of the 72d regiment of the line, which was attached to the army of the North, under the command of General Kleber. In the campaign which ensued, his military conduct was the theme of approbation to his commanding officer, and his promotion was in consequence both great and rapid. Before the end of 1795, he was a general of division, and had successfully effected several important enterprises against the Austrians, with whom the French republic was at that time at war. In the following year, Moreau commanded the French army against the Archduke Charles, and General Bernadotte was placed in the division of Jourdan, and had in many instances a command in which he had entirely to rely upon his own resources. In proportion to the opportunites he enjoyed of distinguishing himself, his name became celebrated, and in this year, 1796, the Directory bore a very convincing evidence of the high estimation in which his capacity was held, by refusing to receive his resignation of his command, which he, in consequence of some charges of extortion made against him at Nuremburg, pressed upon their acceptance.

From this period, the name of Bernadotte is placed more or less in connection with that of Napoleon Bonaparte. In 1797, he had a division of fifteen thousand men in the army of Italy. The want of money was the universal complaint of the early republican armies of France, and great complaints were usual amongst the soldiers for arrears of pay. At Milan, the spirit of mutiny broke out in open violence, and in a positive refusal to proceed. Bernadotte, perceiving that expostulation was of no avail, assumed at once the tone of stern command. "Soldiers!" said he, "if you refuse obedience to my command, I am authorised by the military code to kill every man who does not march against the enemy, and either you shall have the ignominy of assassinating your general, or I will run my sword through the body of every mutineer." Upon pronouncing this resolution, he marched to the head of the 90th regiment, and, pointing his sword to the breast of the first grenadier, he ordered him to wheel to the right, unless he preferred to be run through the body. The soldier obeyed; the army followed in regular order, and the mutiny was effectually suppressed.

When the successes of the French army had induced the Austrian emperor to sue for peace, and

the preliminaries of an accommodation had been signed in October 1797, Bernadotte was quartered at Treviso with his division, when he received the appointment from the directory of ambassador at Vienna. He accepted this embassy, and was received at the imperial court with every mark of distinction. An unfortunate event, however, soon put an end to his diplomatic mission. On the occasion of a public festival, he outraged the feelings of the people by hoisting the tri-coloured flag, and was near falling a victim to their vengeance. As the directory did not take up the case with the ardour he had anticipated, he threw up the embassy, and retired with disgust to Paris. The directory offered him in consolation a command of one of the interior provinces of France, which he indignantly declined. At a subsequent period the embassy to Holland was proffered him; but in his letter to the directory, he expressed the repugnance he felt for all diplomatic concerns, and it was not until 1799 that he again took an employment, when the command in chief of the army of observation was conferred upon him, and he afterwards went into active service at the head of the army of the Lower Rhine, under the superior command of General Jourdan. Reverses were now crowding thick upon the arms of France, owing principally to the unskilful management of affairs at home by the directory. With the view of giving a fresh impetus to the war department, Bernadotte was recalled from the army, and placed at its head. During his short administration, the most vigorous measures for supplying the armies were taken, but mutual disgusts and suspicions sprung up between him and the directory, and he once more retired from office. He took shelter in a small house in the Faubourg du Mousseaux, and gave himself up to domestic enjoyments. In August 1798, he had married Mademoiselle Clary, sister to the wife of Joseph Bonaparte, with which latter personage this connection drew closer his previous bonds of friendship.

The occurrences of the 18th Brumaire, which unseated the directory, and placed Bonaparte at the head of affairs as first consul, met with neither decided opposition nor participation on the part of Bernadotte; and if he disapproved of the proceedings of Bonaparte, and offered his services to the directory to oppose his attempt, as the more ardent admirers of Bernadotte allege, it is at all events certain, that, upon the accomplishment of the revolution, he accepted the office of counsellor of state, and the command of the army destined to eradicate the royalists from La Vendée. In this harassing and dangerous expedition he met with great success; and though the letters he wrote to Bonaparte from the scene of his operations evince a perfect submission to his will and attachment to his person, a discovery of treason in his aid-de-camp Marbot, caused Bernadotte to lose the confidence of the first consul, and, consequently, both his employments.

The assumption by Bonaparte of the imperial dignity, again brought Bernadotte on the stage. He was one of the first who signed the document by virtue of which Napoleon was *elected* emperor of the French; and, on the inauguration, he addressed to him a very flattering harangue, in which he took formal leave of those republican doctrines which he had through life so ardently professed. In these acts, Bernadotte was probably actuated by very sincere affection for his country, being convinced, in common with many of the staunchest defenders of extreme ideas of equality, that a temporary dictatorship, in the hands of an energetic individual, was necessary to suppress the disorders which had so long produced instability and confusion. One of the first acts of Bonaparte, as emperor, was to appoint Bernadotte a marshal of the empire, and general of the army in Hanover. In September 1805, the campaign opened, which was concluded on the 2d of December by the battle of Austerlitz, and the annihilation of the Austrian power. In that series of events, Bernadotte bore a conspicuous part; and the emperor's gratitude was evinced by creating him, on the 5th of June, 1806, Prince and Duke of Ponte Corvo. At this period he possessed the confidence and favour of Napoleon in an eminent degree; and in the war which now broke out with Prussia, he received the command of one of the centre divisions of the grand army. The victory of Jena laid Prussia at the feet of Napoleon. Bernadotte put a finishing hand to the Prussian forces, by defeating their body of reserve under Prince Eugene of Wirtemburg, and afterwards in receiving the surrender of General Blücher and his corps, in conjunction with Murat and Marshal Soult. Before the conclusion of the campaign, which was illustrated by the fiercely contested battles of Eylau and Friedland, Bernadotte was wounded at the bridge of Spandau, which obliged him to quit the army, and surrender his command to Marshal Victor. In 1808, he was sent with an army into Denmark; and when, in 1809, a fresh war broke out with Austria, he was entrusted with the command of the Saxon army. A mistake alleged to have been committed by him in the battle of Wagram, drew down the censure of Napoleon, and he quitted the army on the plea of ill health; but he was afterwards given the command at Antwerp, upon the landing of the British forces at Walcheren. This was his last employment under Napoleon, and it was withdrawn from him under rather irritating circumstances.

One of the results of the famous conferences at Tilsit, between the emperors of France and Russia, was the invasion of Finland, a province of Sweden, by the latter; which was conquered in one campaign. In the midst of this invasion, the country was paralysed by civil strifes, which were ultimately appeased by the forcible, though bloodless, dethronement of the reigning monarch, Gustavus IV., and the election of the Duke of Sudermania to the throne, under the title of Charles XIII. This event took place in June 1809, when the constitution of the state was settled on a liberal representative basis. An alliance with France followed, and Napoleon was applied to by the new king, to use his all-commanding influence with Russia, to procure for Sweden the restitution, at all events, of the islands of Aland. Napoleon returned an answer, brief and bitter—"Apply to the Emperor Alexander; he is great and generous!" Thus left to itself, Sweden was at the mercy of Russia, and was compelled to cede, by treaty, what had been taken by force; thus advancing the Russian frontiers within a few hours' sail of Stockholm. By the constitution of the 6th of June 1809, the death of the heir to the throne was to be followed by an election of a crown prince by the states-general, on the nomination of the king. The violent death of Charles Augustus, crown prince of Sweden, on the 20th June 1810, created a vacancy; and to supply it, four candidates declared themselves—the eldest

son of the dethroned monarch, Gustavus IV.; the Prince of Holstein; the King of Denmark; and Marshal Bernadotte, Prince of Ponte Corvo. The king of Sweden declared in favour of the latter. The states-general acceded to the nomination, in their resolution, declaring that, "considering that the high and mighty prince and lord, Jean Baptiste Julien Bernadotte, Prince of Ponte Corvo, was endowed with virtues and qualities which gave them a well-founded hope of enjoying under his reign the fruits of a legal, energetic, and beneficent government, voluntarily elected him to the dignity of Prince Royal of Sweden, by free and unanimous suffrage for themselves and their descendants; under condition, however, that, before his arrival of the Swedish territory, he should embrace the evangelical Lutheran religion, and sign the conditions which they should draw up." The election took place at Orebro, on the 21st of August 1810. Thus, with the applause of king and people, Bernadotte was elevated to the rank of heir presumptive to the throne of Sweden. It is doubtful whether the consent of Napoleon was asked upon this nomination, or even whether he received it in the light it was intended as a compliment to himself; but he did not withhold his acquiescence, and Bernadotte immediately proceeded to Sweden, where, on the 31st October 1810, he signed the necessary conditions, and on the 5th November made an inaugural speech before the king and the states-general. He was formally adopted by Charles XIII. as his son, and on that occasion assumed the name of Charles John. In the new situation in which he was placed, Bernadotte soon gave proofs of the eminent ability with which he was gifted. By his scrupulous deference and affectionate attention, he gained so perfectly the confidence of the king, that he may be said to have wielded the powers of the executive almost from his arrival. By his liberality, industry, and urbanity, he won the hearts of the people, and soon became amongst them more popular than any of their native princes had been. The moral force he thus possessed, enabled him to act, in the great crisis of events, with decisive energy for the benefit of Sweden.

From the time Bernadotte became crown prince of Sweden, he ceased to be a Frenchman. This, instead of being objected to him, seems his highest praise. It would have been dishonest in him to have accepted the munificent offer of the Swedish nation, if his intentions had been to enslave her to the ruler of the French. But it is evident that Napoleon considered him in the light of a vassal, and to this cause is owing much of the acrimonious feeling engendered in the mind of Bernadotte towards his former patron. The miseries of the "continental system" bore hard upon Sweden, which almost entirely depended upon British commerce; the forcible occupation of Swedish Pomerania and the isle of Rugen by the French, violated existing treaties; the scornful silence of Napoleon, and the outrageous insolence of Count Alquier his ambassador at Stockholm, wounded the pride not only of Bernadotte, but also of the nation. All these concurring circumstances disposed the mind of the crown prince to forsake the party of Napoleon, and to seek new allies. A treaty with Great Britain and Russia was speedily arranged, the terms demanded by him being at once agreed to. The forethought of the crown prince thus enabled him to secure the British and Russian guarantee to his after-possession of Norway, at the expense of the king of Denmark, who had been so steadfast an ally of Napoleon. Before this stipulation was of any consequence, it was necessary to overthrow that colossal power moved by this wonderful man. His reverses in Russia showed that he was not invincible, and they were followed up by a general crusade against him. The crown prince of Sweden took a personal part in the enterprise, with 30,000 Swedes. He commanded the allied army of the North of Germany, composed of Russians, Prussians, and Swedes, amounting to 120,000 men. The confederated armies moved upon Napoleon at Leipzic, and compelled him to a precipitate retreat. This success was followed up, and France, as is well known, was entered by the allied armies. Possession was taken of Paris, Napoleon abdicated, and the Bourbons were replaced on the throne of France. In these latter events Bernadotte was not personally concerned, though, after a treaty with Denmark, in which he compelled that country to cede Norway to the crown of Sweden, he crossed the Rhine, and entered France. On returning to his adopted country, he immediately set about the conquest of Norway. Since 1537, this country had been united to Denmark, of which it was a mere province. Prince Christian, the Danish viceroy, refused to surrender his post, and an opposition was attempted to the progress of Charles John. But it was quickly suppressed; the ancient national assembly of Norway, called the Storthing, was summoned, and a federal union upon advantageous terms of equality was resolved upon with Sweden. A constitution similar to that of Sweden was established—a limited hereditary monarchy, with a national representative chamber. Thus had Bernadotte the glory of uniting under one head the crowns of the Scandinavian peninsula, an achievement which Gustavus Adolphus and Charles XII. had attempted in vain. On the 7th of November 1814, he made his first speech to the Norwegian Storthing, in the name of the king.

The death of king Charles XIII., in February 1818, called Bernadotte to the throne, under the title of Charles XIV. Since his accession to the kingdom, that stupendous work, the canal from the Cattegat to the Baltic, has been completed, and was opened by him in person with great solemnity in 1822. By this effective communication, not only is an inland intercourse opened to an immense extent, but, in the event of a war, the evil consequences of shutting up the narrow straits of the Sound are perfectly neutralised.

In person, Charles XIV. is of a martial and commanding appearance, with a handsome and expressive countenance. His manners are affable and engaging. He generally resides at Stockholm, or at his country-house in the vicinity, and preserves very little state or expensive ceremony. His services to Sweden are duly appreciated by his subjects. His son, the crown prince Oscar, was born in 1799, and married in 1823 to the Princess Josephine of Leuchtenburg, grand-daughter of the king of Bavaria, by whom he has several children.

BERIOT, Madame Malibran de, a celebrated vocal actress, the eldest daughter of Senor Manuel Garcia, an eminent tenor singer in the Italian Opera, was born at Paris in 1808. At the age of eight years she accompanied her parents to London, where she spent a number of years in unceasing study. In 1825, at the age of sixteen, she made her first appearance on the stage as one of the chorus of the Italian Opera; and in 1826, she

accompanied her family to America to assist in the novel attempt to establish the performance of Italian operas in that country. At New York, she was married to M. Malibran, an elderly French merchant, who soon after failed, and was cast into prison; and Madame Malibran, believing she had been deceived, voluntarily gave into the hands of his creditors her marriage settlement, left her husband, and returned to England to seek support from the exercise of her vocal and dramatic talents.

Her performances in London and Paris excited the most enthusiastic applause. Her reputation soon occupied the attention of the musical society throughout Europe; and she traversed extraordinary distances to fulfil numerous engagements in different cities on the continent. Her last engagement at Naples was for 80,000 francs and two benefits and a half, for forty nights; and that upon which she entered at Milan, with Duke Visconti, (the director of *La Scala*,) was, exclusively of other profitable stipulations, 450,000 francs for 185 performances. Her generosity was so unbounded, that, after a few years of her career, during which she had gained immense sums, she had expended so much upon her relatives and to oblige her friends, that she had little or nothing left.

Her short and singular history was closed at Manchester, where she had been engaged to attend the grand musical festival which was celebrated in that town from the 13th to the 17th September, 1836. She arrived after a rapid journey from Paris, on the 11th of September, was taken ill on the 13th, the day of the commencement of the public performances, yet she sung on that day, and also on the 14th, with enthusiastic applause, but was too ill to sing more; and she expired on the 23d.

A remarkable combination of fine qualities rendered her the wonder of all who saw or heard her. Her mental conceptions were of the highest order; while in the demonstrative and executive parts of her art, in the exercise of faculties of the most rare and exciting nature, she has never been surpassed. She has been heard to sing, in one evening, in six different languages, and with unqualified admiration in all.

In March, 1836, Madame Malibran, being then in Paris, and freed by the French courts from her union with M. Malibran, was married to M. de Beriot, a Belgian, whose talents as a violinist had placed him in the highest rank in his profession. During her last illness she mentioned that she had known M. de Beriot nine years, and had been seven years married to him, but that she had not been able to make their marriage known until within the last two years.

BERRY, Sir Edward, Bart.; a distinguished naval officer, was the son of Edward Berry, Esq., a merchant of London, and was born on the 17th of April, 1768. Having evinced an early predilection for the sea-service, he was introduced into the royal navy, under the auspices of Lord Mulgrave, on the 5th of February, 1779, when he wanted some months of being eleven years of age; and made his first voyage to the East Indies in the Burford, of seventy guns. The first recorded circumstance of his professional life was the boarding of a French ship of war; for which action he was rewarded with a lieutenant's commission. His subsequent conduct in the glorious battle of June 1, 1794, also obtained for him the approbation of his superiors. Being first lieutenant of his Majesty's ship Captain, at Porto Ferrajo, Sir Horatio Nelson recommended him for promotion for "the masterly style in which he brought that ship to bear on the batteries." Early in 1796, Mr Berry was appointed by Sir John Jervis, under whom he had before served, to the Agamemnon, of sixty-four guns, commanded by Commodore Nelson, to whose favourable notice he soon recommended himself. For his heroic conduct at the battle off Cape St Vincent, he was made a post-captain on the 6th of March, 1797. On the 19th of December following, he commissioned the Vanguard, of seventy-four guns, fitting for the flag of his friend Nelson, with whom he soon after returned to the Mediterranean station. The proceedings of the squadron detached from the fleet off Cadiz to watch the armament about to sail from Toulon, under General Bonaparte, and which ended in the total defeat of the enemy, on the 1st of August, 1798, are well known. Soon after the termination of the tremendous conflict in Aboukir Bay, Captain Berry was sent to the commander-in-chief with the rear-admiral's despatches; from which we make the following extract:—"The support and assistance I have received from Captain Berry cannot be sufficiently expressed. I was wounded in the head, and obliged to be carried off the deck; but the service suffered no loss by that event. Captain Berry was fully equal to the important service then going on; and to him I must beg leave to refer you for every information relative to this victory." On his passage down the Mediterranean in the Leander, of fifty guns, commanded by the late Sir T. B. Thompson, he had the misfortune to be made prisoner by Le Généreux, a French seventy-four. He also received a severe wound in the desperate action which took place on that occasion. The enemy, on taking possession of their prize, not only plundered the officers and crew of every thing they possessed, but afterwards, by their cruelty and neglect, exposed the sick and wounded to almost certain death, However, Captains Thompson and Berry were permitted to return, on their parole of honour, to England, where he was knighted by his Sovereign, on the 12th of December, 1798; received a gold medal in common with the other officers who had shared in the late triumph; and was presented with the freedom of the metropolis in a gold box, value 100 guineas. He also received the thanks of the court-martial held to inquire into the circumstances attending the capture of the Leander, "for the gallant and active zeal he manifested, by giving his assistance in the combat." In the autumn of 1799, Sir Edward Berry repaired once more to the Mediterranean, as captain of Lord Nelson's flagship, the Foudroyant; and early in the following year had the satisfaction of assisting at the capture of his old opponent, Le Généreux, and of Le Guillaume Tell, a French eighty, the only remaining ship which had escaped from the battle in Aboukir Bay. In this conflict, the Foudroyant expended a hundred and sixty-two barrels of gunpowder, and two thousand seven hundred and forty-nine cannon shot of various sizes. A more heroic defence than that made by the Guillaume Tell is not on record. Her colours were kept flying until she had become an ungovernable log; and she sustained a loss of two hundred men killed and wounded. The Foudroyant's loss was eight men killed, and sixty-one wounded. During the action, Sir Edward Berry was hurt in the foot, but not so much as to induce him to quit the deck. Some time afterwards he presented the ensign of

Le Génereux to the corporation of Norwich; by whom it was suspended in St Andrew's Hall, with an appropriate inscription and trophies. In the month of June following, Sir Edward conveyed the Queen of Naples, her family and attendants, from Palermo to Leghorn; from which place lord Nelson proceeded across the continent on his way to England, and the Foudroyant to Minorca to refit. Previously to the landing of the above personages, her Sicilian Majesty presented Sir Edward with a gold box, set with brilliants, and a diamond ring. Towards the latter end of the same year, he returned to England in the Princess Charlotte frigate; and during the remainder of the war he commanded the Ruby, of sixty-four guns, stationed in the north sea. In the summer of 1805, Sir Edward Berry was appointed to the command of the Agamemnon, of sixty-four guns; and sent to join Nelson's fleet. On his passage out, he most conspicuously evinced his profound knowledge of seamanship. During the night, he found himself with a single ship, and that very old and of very small dimensions for her rate, in the midst of the Rochfort squadron, consisting of five sail of the line, two frigates, and a brig, off Cape Finisterre. He well knew the value to Lord Nelson of every additional ship, uninjured and without delay; and, by his superior seamanship and skill, he contrived to get away from them, and joined Lord Nelson a short time before the great battle of Trafalgar: and he had the satisfaction of knowing that his Lordship and the Lords of the Admiralty highly commended his conduct on this occasion. At the battle off Cape Trafalgar (the 21st of October, 1805,) and its unparalleled victory, which totally frustrated Bonaparte's plan for invading England from Boulogne, the Agamemnon was the eighth ship of the van column of the British fleet; and Sir Edward Berry sustained his high and bravely earned reputation. After that memorable event, he proceeded to the West Indies in the same ship, the Agamemnon, and participated in the victory gained by Sir Thomas Duckworth, on the 6th of February, 1806, off St Domingo. On that occasion, having silenced a seventy-four-gun ship, and caused her to strike her colours, he hastened to attack another; when, to his great surprise, the first ship rehoisted her colours, and was again captured; which circumstance caused some unpleasant altercation after the action. Upon his return home, the committee of the patriotic fund at Lloyd's presented Sir Edward with a sword, value a hundred guineas, also with three silver vases, commemorative of the three great battles in which he had been engaged. He also received two medals from the king; one for the action of Trafalgar, and the other for the action of St Domingo; and having previously obtained a medal for the action of the Nile, he was the only officer of his Majesty's navy who had the honour of possessing three medals. At the close of the same year he was created a baronet, by patent, dated Dec. 12, 1806. In the autumn of 1811, Sir Edward obtained the command of the Sceptre, of seventy-four guns; from which ship he was removed the next year into the Barfleur, of ninety-eight guns; and again sent to the Mediterranean, under Lord Exmouth. In December, 1813, he was appointed to the Royal Sovereign yacht; and in the summer of the following year, he was in attendance on the allied monarchs, during their visit to the fleet, at Spithead. He subsequently commanded the Royal George, another yacht; and on the 2d January, 1815, was nominated a K. C. B. At the general promotion, August 12, 1819, he obtained one of the vacant colonelcies of royal marines; on the 19th July, 1821, was advanced to the rank of rear-admiral of the blue; and subsequently to that of rear-admiral of the red. For several years this distinguished officer had been suffering under severe illness and extreme debility, the effect of paralysis, which rendered him totally incapable of taking upon himself the active duties for which his distinguished talents in his profession and his high character, so eminently qualified him. At the restoration of peace, in 1814, he returned to Norfolk, and took up his residence at Catton, near Norwich; whence after some years he proceeded to Bath, for the benefit of his health. With the same design, the gallant baronet subsequently made a continental tour; and lived for some time at Pisa, in Italy. The hopes of re-establishing health were unhappily not realised; and he returned to Bath, where he expired on the 13th of February, 1831; aged sixty-two. Sir Edward Berry was remarkable for his coolness and intrepidity in carrying into action his ship, which was at all times well disciplined, but without undue severity and coercion. In private life he was exemplary for strict integrity, and was a sincere friend. He married, on the 12th of Dec. 1797, his first cousin, Louisa, daughter of the Rev. Samuel Forster, D. D., rector of Shotley, in Suffolk; but he died without issue, and the baronetcy has consequently become extinct.

BEVERLEY; a market and borough-town in the east riding of the county of York, 183 miles N. from London, twenty-nine E. S. E. from York, and nine N. E. from Hull. It consists of several streets, the principal one being nearly a mile in length, spacious, and terminating in an ancient gateway. On the outside of this gate, the approach from the Driffield road is uncommonly fine, there being many handsome houses, especially on the north-east side. The streets are lighted and well-paved, and there is a good supply of water for the use of the inhabitants. The environs are very agreeable and the air is considered salubrious. The poorer classes of inhabitants are partially employed in the manufacture of bone lace. It has a considerable trade in coals, corn, oatmeal, malt, and leather, which is much facilitated by a canal called Beverley Beck, communicating with the river Hull. This was brought into its present condition in 1727, according to an act of parliament, but it appears to have been navigable from a very early date, being mentioned in the books of the corporation in 1344. The market-days are Wednesday and Saturday, the latter being the most important. On every alternate Wednesday there is a great market for sheep and horned cattle. The market-place is a spacious area, of the extent of four acres, in the centre of which is a stately cross supported on eight pillars, each consisting of a single block of free-stone. Races take place annually in June, on Hurnmeadow, one of the four common pastures belonging to the town, on which a commodious stand has been erected. A theatre was erected here in 1805, and is occasionally opened; assemblies take place frequently in a suite of rooms erected for the purpose.—Beverley comprises four parishes: St John, St Martin, St Mary, and St Nicholas, all within the jurisdiction of the peculiar court of Beverley. The living of St John's, to which is annexed that of St Martin's, is a perpetual curacy of

the certified value of £31 6s. 8d., and in the patronage of the corporation. The church of St Martin no longer exists. The church of St John, which is popularly called Beverley minster, was founded on the site of an ancient structure, in 1060, by Kinsius, archbishop of York. The present building is supposed to have been completed in the reign of Henry III. and is a venerable cruciform structure, with two lofty towers at the west end.

The following account is given by Tanner.—"John, archbishop of York, afterwards called St John of Beverley, is said to have founded, about the year 700, in the choir of the parish church here, a convent of monks dedicated to St John the Baptist; in the nave of the church, a college of seven secular canons with seven clerks, to the honour of St John the Evangelist; and in the chapel of St Martin, adjoining this church, a society of religious virgins or nuns. But, about one hundred and sixty years after, the religious here were murdered, and the church and buildings plundered and burnt to the ground by the Danes. Not long after, some of the seculars who had fled from and escaped the Danish fury, began to settle here again and to repair the church, which was completed and endowed with revenues for seven canons, and with large privileges (to the honour of St John of Beverley,) by king Athelstan, and the favour and bounty of succeeding kings, and of the archbishops of York, who claimed the immediate patronage. This collegiate society flourished to that degree that it consisted, at the dissolution, of a provost, eight prebendaries, a chancellor, preceptor, seven rectors choral, nine vicars choral, with many chantry priests, clerks, choristers, officers and servants."

The town owed the origin of its prosperity to this monastic establishment. St John of Beverley, to whom the church is dedicated, held the see of York for thirty-three years, with a reputation for great sanctity, and afterwards retired to finish his days in obscurity and devotion in the monastery which he had founded here. "He was educated," says Fuller, "under Theodorus the Grecian, and archbishop of Canterbury. Yet was he not so famous for his teacher as for his scholar, Venerable Bede, who wrote this John's life, which he hath so spiced with miracles that it is of the hottest for a discreet man to digest into his belief." After his death, which took place in 721, he was canonized by the title of St John of Beverley. Population of Beverley in 1831, 8302; in 1841, 8409.

BEVERLEY, John of. See the preceding article.

BEWDLEY; a borough town in the county of Worcester, fourteen miles N. W. from Worcester, and 122 N. W. from London. It is situated on the western bank of the river Severn, over which a very handsome stone-bridge was erected in 1797. The houses are in general well-built and of a respectable aspect, especially in the principal street, which diverges right and left from the bridge, and is partially paved but not lighted. The inhabitants have a plentiful supply of water, and the air is salubrious.

The trade of Bewdley is chiefly connected with the carrying trade on the river Severn. It was formerly the mart from which the neighbouring towns were supplied with many imported articles of consumption, but this trade has fallen off very much, in consequence of the recent construction of a canal from Stourport to Stourbridge. It was formerly famous for the manufacture of a species of woollen caps called Dutch caps, which was introduced here in consequence of the plague breaking out at Monmouth, where it had been previously carried on, but this trade has fallen into decay. The tanning of leather and making of combs are carried on to a considerable extent, and much malt is made for exportation. Markets were formerly held here twice a-week, but only one is now held, on Saturday.

Bewdley, with the parish of Ribbesford, and the hamlets of Wribbenhall, Hoarstone, Blackstone, Netherton, and Lower Mitton with Lickhill, under the reform act, returns one member to parliament. Population in 1831, 3908; in 1841, 7458.

BEWICK, Thomas, a very eminent designer and engraver on wood, was born at Cherry Burn in the county of Northumberland, 12th Aug. 1753. His father possessed a landsale colliery at Mickley Bank. He early indicated the bent of his genius by sketching figures with chalk on the walls and doors of almost every house in Cherry Burn. This propensity was the means of introducing him to his future master, who, in passing accidentally through the hamlet, witnessed these pictorial exhibitions of the future wood-cutter, and, after the necessary introduction to his parents, secured him as his apprentice. At the age of fourteen he was bound apprentice to Mr Beilby of Newcastle, a respectable engraver, and one who took delight in instructing his pupils and encouraging their rising talents. Whether young Bewick would at an after period of life, and without the suggestion of others, have directed his attention to wood-cutting, it is difficult to say, but at all events an accidental circumstance determined his future career in the arts. The celebrated Dr Hutton, at that time a schoolmaster in Newcastle, was preparing in 1770 his great work on mensuration, and having applied to Mr Beilby to supply copper plates of the mathematical figures, he was advised to employ woodcuts instead. The great mathematician acceded to this proposal, and Mr Beilby entrusted the execution of them to his apprentice. With such beauty and accuracy were they finished, that the young engraver was advised by his master to turn his chief attention to this long-neglected art, and the consequence was a succession of mathematical works illustrated with very beautiful diagrams engraved on wood. These figures, consisting chiefly of lines, are not so difficult of execution as those in which shading and a variety of waving and blending lines are necessary to give effect, and present an image of the object to be represented. But the usefulness of the art was not long to be limited to the illustration of mathematical works. After his apprenticeship had expired, Bewick spent a short time in the metropolis, and also paid a visit to Scotland, after which he returned to Newcastle, and became a partner in his master's business. His brother John, who was seven years his junior, became their joint apprentice, and he soon evinced talents and skill equal if not superior to those of his elder brother. Unfortunately for the arts and for society, of which he was an ornament, this promising individual was cut off in the thirty-fifth year of his age. The publication of an edition of Gay's Fables afforded an opportunity for the Bewicks displaying their talents in the higher branches of wood-engraving, by the illustrations which they furnished for the work. One of these, the Old Hound, obtained the premium offered by the So-

ciety of Arts for the best specimen of wood-engraving in the year 1775. An impression of this may be seen in the memoir which is prefixed to "Select Fables," printed for Charnley of Newcastle in 1820, and sold in London by Baldwin and Cradock. The Fables of Gay were published in 1779, and in 1784, the appearance of a new edition of the "Select Fables," with an entire new set of cuts by the Bewicks, spread far and wide their reputation, and placed them above competition in the art. The animal kingdom very early presented to Mr Bewick great attractions, and a love of observing them in all their various phases, continued through life. Their forms, habits, and attitudes, became thus so familiar to him, that to delineate them faithfully, and in every conceivable position, was only what was to be expected from so excellent a draughtsman. He neglected no opportunity of making himself acquainted with those collections of foreign animals which occasionally visited Newcastle in itinerant caravans, and this led to the publication of the "History of Quadrupeds," which, after being carefully prepared, made its appearance in 1790. The prospectus of this great work was the means of introducing him to a gentleman who possessed a museum, remarkable for the number and variety of its specimens of winged and quadruped animals, living and dead, and of these Mr Bewick was invited to take drawings, which tended greatly to enrich all his subsequent publications. Amongst the remarkable wood-cuts which adorned the "History of Quadrupeds," was a representation of one of those wild cattle of the ancient Caledonian breed, which were kept in Chillingham Park, Northumberland, the seat of Lord Tankerville. This engraving is considered the *chef-d'œuvre* of the artist; but from its great size (being the largest he ever executed), it broke after a few impressions were taken off. The pieces were afterwards firmly clamped together, so as to bear the force of printing, and copies of the portrait of the bull may still be obtained. The work on Quadrupeds was very well received by the public at its first appearance, and it has ever since been held in the highest estimation. The pictorial embellishments exhibit every excellence which engravings of animals ought to possess—boldness of design, variety and exactness of attitude, correctness of drawing, and discrimination of general character. A spirit of life and animation pervaded every figure, and thus a lively idea of each different animal is conveyed. Short descriptions accompanied the engravings, chiefly drawn up by Mr Bewick's coadjutors, Messrs Hodgson and Beilby, but subject, it is highly probable, to his corrections and additions. He who had studied living nature so closely in all her varied aspects, must have accumulated a rich store of original observations and anecdotes wherewith to adorn his works. But a great and unexpected charm belonged to the History of Quadrupeds—this was the profusion of vignettes and tail-pieces with which the whole volume was adorned. These exhibited remarkable inventive genius, and a skill in catching the very lineaments, in which the specific expression of the species resides, never before equalled. Many of these embellishments are connected with the manners and habits of the animals near which they are placed; others, again, merely exhibit the fancies and sportive or dry humour of the artist, his particular notions of men and things, partaking both of the droll and the pathetic, as, for instance, a ragged sheep picking at a besom—a troop of Savoyards, weary and foot-sore, tugging poor bruin to the next fair—a broken-down soldier, trudging, with stern patience, through the slant rain-storm—a poor travelling woman looking wistfully at a mutilated milestone—a blind old beggar, whose faithful dog stops short, with warning whine, on the broken plank that should have crossed the swollen brook—and so on. This great work established the fame of Bewick on a foundation which could not be shaken. It has passed through numerous editions, with continually growing improvements.

Amongst the other works embellished by Bewick, were the "Deserted Village" of Goldsmith, and Parnell's "Hermit." These were executed in conjunction with his younger brother, who had removed to London, where he soon became very eminent in his profession. Amongst others whose attention he attracted, was Mr William Bulmer, the spirited proprietor of the Shakspeare press. It was under his auspices that the above poems were published, and the success which they met with induced him to speculate still further. He projected a new edition of Sommerville's "Chase," embellished with wood-engravings; and the younger Bewick had, with the exception of a single cut, drawn the whole of the designs on the blocks, when he was cut off by a pulmonary complaint, probably contracted by too great application. They were all, however, beautifully engraved by Thomas Bewick, and the appearance of the work materially increased his reputation. The subjects which ornament the work being entirely composed of landscape scenery and animals, were well adapted to display the beauties of wood-engraving. In 1797 appeared the first volume of the "History of British Birds, comprising the Land Birds," the letter-press being furnished by Mr Beilby. Before the publication of the second volume on "British Water Birds," a separation of interests took place, so that its compilation and completion devolved on Mr Bewick alone, with the assistance of a literary friend. The usual excellences of the artist were displayed in this beautiful and valuable work. The drawings are minutely accurate, and express the natural delicacy of feather, down, and foliage, in a peculiarly happy manner. The value of the work was greatly enhanced by the vignettes and tail-pieces, in which the genius, humour, and fancy of the artist, are even more conspicuous than in the volume on Quadrupeds. His next works were four very large cuts, representing the zebra, the elephant, the lion, and the tiger, which were engraved for the proprietor of a menagerie. In 1818, he published "The Fables of Æsop and others, with designs by Thomas Bewick;" and two or three years afterwards, appeared a volume of Select Fables, the wood-cuts being a selection from the earlier works of the Bewicks. The public were thus enabled to study the gradual advancement towards excellence which had been made by the revivers of this elegant and useful art.

Several of the latter years of Mr Bewick's life were, in part at least, devoted to a work on British Fishes. A number of drawings were made and engraved, and a very large proportion of vignettes prepared, when the death of the projector put a stop to the undertaking. The last production of Mr Bewick was a cut of an old horse, intended to head an address on cruelty to that noble animal; the proof of which was brought to him from the press only three days previous to his dissolution.

The grand improvement which Mr Bewick introduced into wood-cutting (it merits the higher title of invention) was the production of a complete and finished style, with a perspective effect. This was obtained by slightly lowering the surface of the block where the distance or lighter parts of the engraving were to be shown to perfection, an idea suggested by his early friend Mr Bulmer. Certain parts of the block he left untouched by the graver, and by this means introducing great breadth of light and shade, he produced a bold and determined effect, with a mellowness and brilliancy of tint almost equalling in softness the most highly finished drawings in Indian ink.

Mr Bewick's death took place at his residence, near the Windmill Hills, Gateshead, on the 8th Nov. 1828, in the seventy-sixth year of his age. In his mode of living, Bewick was plain and regular. He practised early rising, indulged in rustic and athletic sports, and accustomed himself to hardships of various kinds. During the severest winter he kept the windows of his bedroom open, and it was no uncommon occurrence for him to find the snow drifted upon his bed-clothes. With a frame originally robust and vigorous, and the employment of various means to secure health, it is not surprising that he enjoyed it in high perfection. The warmth of his attachments, particularly to the various branches of his own family, was very great. During his apprenticeship, his regular custom was to visit his parents once a-week. They lived at Cherry Burn, which is fourteen miles distant from Newcastle; and when the river Tyne happened to be so swollen as to prevent his getting across, he used to shout over to his family, and after obtaining the required information relative to their health, return home. With respect to his social habits, it is related of him that he did not mix a great deal with the world, for he not only possessed a singular and most independent mind, but in his habits he was naturally most persevering and industrious, qualities of character incompatible with the frivolities of society. At his bench he worked and whistled with light-hearted, joyous industry, from morn till night, and the number of blocks which with indefatigable perseverance he engraved, is almost incredible. He died, as he had lived, an upright and truly honest man; and breathed his last, after a short illness, in the bosom of the family whose society he preferred to every other enjoyment.

BICKERTON, Sir Richard Hussey, of Upwood, Huntingdonshire, K. C. B. and K. C.; admiral of the Red; general of the royal marines; vice-president of the naval charitable society; and F.R.S., was the only surviving son of Sir Richard, himself a gallant naval officer, by Marie Anne, daughter of Thomas Hussey, Esq., of Wrexham. He was born on the 11th of October, 1759, and entered the naval service in December, 1771, as a midshipman, on board the Marlborough 74, commanded by his father, with whom he removed, October, 1773, into the Princess Augusta yacht; and from her was discharged, June, 1774, into the Medway, of sixty guns, bearing the flag of vice-admiral Mann, commander-in-chief on the Mediterranean station, with whom he continued till 1776, and was then lent to the Enterprise frigate, commanded by Sir Thomas Rich, as affording a better opportunity for him to learn his duty. He afterwards joined the Invincible, of seventy-four guns, Captain Hyde Parker, and returned to England in November, 1777. On the 16th of December, 1777, Mr Bickerton was made a Lieutenant, and appointed to the Prince George; but soon after left that ship, and accompanied Captain Middleton (afterwards Lord Barham) into the Jupiter, of fifty guns.

On the 20th of October, 1778, the Jupiter, then commanded by Captain Reynolds (afterwards Lord Ducie), being on a cruise in the Bay of Biscay, in company with the Medea, a small frigate, fell in with the Triton, a French line-of-battle ship. At five p. m. the Jupiter brought the enemy to close action, in which she was joined by the Medea; but unfortunately, at the commencement of the engagement, a thirty-six pound shot entered the bow of the latter, under water, and compelled her to bring to, for the purpose of stopping the leak it had occasioned. Captain Reynolds, however, continued the action, with great bravery, till eight o'clock, when the French ship made sail, and bore away for Ferrol; where it was reported that she arrived, with the loss of her captain, and 200 men killed and wounded. The gallantry of Captain Reynolds and his officers was greatly enhanced by the circumstance of the Medea having been totally prevented from affording him any effectual assistance. On the return of the Jupiter to England, Captain Reynolds made a point of recommending all his officers; and, on the 20th of March, 1779, obtained the rank of master and commander for his first lieutenant, Mr Bickerton; a sufficient proof of the able and satisfactory manner in which that gentlemen had conducted himself.

At the close of 1779, a squadron, under Captain Charles Fielding, was sent to intercept a fleet of Dutch merchantmen, said to be destined to France, laden with warlike stores. On the 2d o January, 1780, they were discovered a little to the westward of the isle of Wight, escorted by two ships of the line and two frigates, commanded by Admiral Count Byland. The British commodore desired that he might be allowed to search the merchant vessels, which the count persisted in refusing, and fired at the boats in their attempt to board them; to resent which insult the commodore ordered a shot to be directed ahead of the Dutch admiral, who instantly discharged a broadside into the Namur, and, upon her returning it, struck his colours. On this occasion the commodore employed Captain Bickerton, then in the Swallow sloop of war, to assist him in detaining such Dutch ships as might fall in his way; and expressed himself highly pleased with the vigilance he displayed. Seven of the merchant vessels, laden with naval stores, were detained; and Count Byland was given to understand, that he was at liberty to hoist his colours, and prosecute his voyage with the remainder. The Dutch admiral accepted the former part of the proposal, and saluted the British flag; but declined proceeding without the whole of the vessels, and sailed into Spithead. From the darkness of the night, many of the transports with stores escaped, and got safe into Brest. Towards the end of the same year, the Swallow was ordered to the West Indies; and in February, 1781, Captain Bickerton was present at the capture of St Eustatia, by the naval and military forces under the respective commands of Sir George Rodney and General Vaughan. On the 8th of the same month, Captain Bickerton was posted into the Gibraltar, of eighty guns; and in the skirmish which took place between the British and French fleets under the respective commands of Sir Samuel Hood and

the Count de Grasse, April 29th following, he commanded the Invincible, of seventy-four guns.

Captain Bickerton was subsequently appointed in succession to the Russel and Terrible, both seventy-fours: but finding the latter unfit for service, he exchanged into the Amazon frigate, and was ordered to England. The Amazon was paid off in the month of February, 1782. In September following, he obtained the command of the Brune, another frigate; but, in consequence of the peace which took place in 1783, she was soon after put out of commission. Captain Bickerton was not called upon again till January, 1787, when he commissioned the Sybil, and proceeded to the Leeward islands; on which station he remained, under the orders of that excellent officer the late Sir William Parker, till the year 1790: but as general tranquillity then prevailed throughout Europe, he was not concerned in any transaction immediately deserving of record.

In February, 1792, he succeeded to the title, on the demise of his father: and in the following year commanded the Ruby, of sixty-four guns. He afterwards removed to the Ramillies, seventy-four, and cruised with lord Howe, in the Bay of Biscay, during the autumn of 1794. In October, 1794, the Ramillies carried General Sir John Vaughan to the West Indies, where she continued till July, 1795, and was then ordered to Newfoundland, from whence she returned to England in the month of November following. During the whole of the ensuing year, Sir Richard Bickerton served in the North sea, under Admiral Duncan. In 1797, he was appointed to the Terrible, of seventy-four guns, forming part of the channel fleet, at that period commanded by Lord Bridport, on which service he continued till promoted to the rank of rear-admiral, February 14th, 1799. In the autumn of that year, he hoisted his flag at Portsmouth, as assistant port-admiral; a situation requiring an extraordinary degree of vigilance and activity.

On the 13th of May, 1800, Sir Richard sailed for the Mediterranean, in the Seahorse, being appointed to a command on that station, under Lord Keith. Generals Abercromby, Moore, and Hutchinson, were passengers on board the same frigate. On the arrival of Sir Richard Bickerton, he hoisted his flag on board the Swiftsure, Captain Hallowell (the present Admiral Sir Benjamin Hallowell Carew), and proceeded to Cadiz, with four seventy-fours and two frigates under his orders, to blockade that port. The expedition against the French in Egypt being ready, Sir Richard Bickerton left Cadiz, and proceeded with Lord Keith to Alexandria, which port he blockaded until it surrendered to the British arms.

On the news of peace arriving in Egypt, Lord Keith returned to England, leaving Sir Richard at Alexandria, to superintend the embarkation of the French army; a service that was conducted with so much celerity, as to excite from the republican General Menou, not only his grateful acknowledgments, but the flattering compliment that "the vigilance of Sir Richard's squadron had accelerated the reduction of that place, as it cut them off from all supply." During the rear-admiral's stay in Egypt, he had the honour of being invested by the Captain Pacha, with the insignia of the Turkish Order of the Crescent. The ceremony was performed on the spot where the battle was fought which decided the fate of that country.

During the short-lived peace, Sir Richard Bickerton commanded in the Mediterranean, with his flag in the Kent, of seventy-four guns. On the 23d of April, 1804, he was advanced to the rank of rear-admiral of the red, and about the same time hoisted his flag on board the Royal Sovereign a first rate; and when Lord Nelson went in pursuit of the combined squadrons to the West Indies, he was left by his lordship to command on that station. In Sept. 1805, ill health compelled Sir Richard to return to England On the 9th of Nov. 1805, he was advanced to the rank of vice-admiral. A change taking place in the administration, Sir Richard Bickerton was, in April, 1807, nominated one of the lords commissioners of the admiralty, and soon afterwards, at the general election, was returned to parliament as one of the representatives for Poole. While he was at the board of admiralty a promotion of flag officers took place, and Sir Richard Bickerton, on the 31st of July, 1810, was made admiral of the blue. Sir Richard Bickerton retained his seat at the admiralty until 1812, when he succeeded Admiral Sir Roger Curtis as commander-in-chief at Portsmouth. The Order of the Bath being divided into three classes, Sir Richard Bickerton was, in 1815, created a knight commander of the same; and on the death of Admiral Sir Richard Onslow, the father of the present lady Hyde Parker, in January, 1818, was appointed lieutenant general of the royal marines; and upon the accession of his late Majesty to the throne, was made general of that meritorious corps, which had been held some years by the king while duke of Clarence.

On the 24th of May, 1823, in compliance with the will of his maternal uncle, lieutenant-general Vere Warner Hussey, Sir Richard Bickerton took the name of Hussey in addition to his own. He married, Sept. 25th, 1788, Ann, daughter of the late Dr James Athill, of Antigua, who survives him. Sir Richard Hussey Bickerton expired at Bath, 9th of February, 1832, in the seventy-third year of his age. There being no issue, the baronetage became extinct.

BIDEFORD; a sea-port in the county of Devon, 202 miles from London. It is situated on the river Torridge, a short distance above its confluence with the Taw, which falls into the bay of Barnstaple. The greater part of the town is built on a steep acclivity on the western side of the river, and the remainder is at the foot of a hill on the eastern side. These are connected by a stone bridge, consisting of twenty-four arches, and 220 yards in length, below which vessels of sixty tons burden can pass. It was erected in the fourteenth century, and is endowed with lands for keeping it in repair. There is a considerable trade carried on at this port, which includes within its jurisdiction the harbours of Clovelly and Hartland. Sails, cordage, oak-bark, fruit, earthenware, corn and flour, are among the exports; American and Baltic timber, and coal from Bristol and Wales, form now the chief imports. There is a convenient quay, upwards of 1200 feet in length, which, except at ebb-tide, can be approached by vessels of 500 tons burden. Vessels of 300 tons burden in full-tides can come up as far as the bridge, above which lesser vessels can pass to a considerable distance, and enter the Torrington canal through a sea lock at the distance of two and a half miles. Ship-building forms the principal business of the place. Population in 1831, 4846; in 1841, 5211.

BIGLAND, John, was a native of Skirlaugh, in

Holderness, and far the greater portion of his life was spent in the humble occupation of a village schoolmaster. He moved his residence more than once; but we believe his school was for the longest period at Rossington, near Doncaster. Such an employment was far from profitable; but Mr Bigland knew how to live upon little, and he continued to plod on from manhood to maturer age without the hope of bettering his condition. Under these circumstances, and when upwards of fifty years of age, he became an author, and published his first work in 1803. It consisted of "Reflections on the Resurrection and Ascension of Christ," a subject which had long occupied his attention, and originally studied, not with a view to publication, but for the purpose of combating his own scepticism, and establishing his faith by incontrovertible deductions. This done, he committed the result to the public, not with the hope of attaining any literary honours, but of convincing others as he himself had been convinced. The success of this little volume, and the flattering commendations bestowed upon it, made the writer of more consequence both in his own estimation and the estimation of others, and in the following year he published his "Letters on the Study and Use of Ancient and Modern History;" and "Letters on the Modern History and Political Aspect of Europe." As these were well received, he from that time became an author by profession. His subsequent productions are, Essays on various subjects, 2 vols. 1805; Letters on Natural History, 1806; a System of Geography and History, 5 vols. 1809; History of Spain, 2 vols. 1810; History of Europe from the Peace of 1783 to the present time, 2 vols. 1811 (in a later edition continued to 1814;) the Philosophic Wanderers, or the History of the Tribune and the Priestess of Minerva, 1811; Yorkshire, being the 16th volume of the Beauties of England and Wales, 1812; the History of England; Letters on Natural History, from the earliest Period to the Close of 1812, 2 vols. 1813 (subsequently continued to 1814;) a System of Geography for the use of Schools, 1816; an Historical Display of the Effects of Physical and Moral Causes on the Character and Circumstances of Nations, 1817; Letters on French History, 1818; also Letters on English History, and a History of the Jews. He likewise contributed to some of the magazines. He died at Finningley, near Doncaster, Feb. 22, 1832, aged 82.

BILLINGS, WILLIAM, an English private soldier of the last century, remarkable for his long and adventurous life, was born in the parish of Alstonefield, Staffordshire, in the year 1679. In his youth he was a farmer's servant; but preferring a life of enterprise to the quiet of domestic life, and being, perhaps, roused by the warlike spirit of the time, he quitted his situation in 1702, and, going to Derby, enlisted in a regiment then stationed in that town. This regiment afterwards formed part of the expedition which was sent, under the command of Sir George Rooke, against Gibraltar, which at that time belonged to the king of Spain. After Gibraltar was taken, Billing's regiment was sent into Flanders, and formed part of the army of prince Eugene and the Duke of Marlborough. At the battle of Ramillies, 1706, Billings had the honour of saving the life of the "great captain." The duke was thrown from his horse in leaping a ditch, and was nearly surrounded by a detached party of Marshal Villeroi's army, determined to take him either dead or alive; when Billings, observing the perilous situation of his commander, immediately brought to his relief a few of his comrades, who threw themselves between their general and the enemy, and succeeded in bringing him off in safety. But although Billing's intrepidity and presence of mind had saved the duke, he had himself the misfortune to receive, during the skirmish, a musket-ball in the thick part of his thigh, which the surgeons were unable to extract. About thirty years after this affair, however, it worked itself downward, and eventually came out underneath his ham. Billings carefully preserved, to the day of his death, this "French cherry," as he jocularly called the ball. After having had his due share in the several actions of the memorable war under Marlborough, Billings returned to England in 1712, with the safe possession of all his limbs. In 1715, he served against the rebels; and, in 1745, he also served at Prestonpans and Culloden. He spent in the army *three quarters of a century*, and that principally in foreign lands, but never received any promotion; and, for some unexplained reason, on his discharge no pension was allotted to him. The old man was, however, during his remaining days, preserved from entire destitution by the charity of his neighbours. He died in 1794, at the advanced age of 114 or 115 years. From his birth to his death, he never experienced a day's illness; and his final passage from life was perfectly tranquil. In the churchyard of Longnor, a small market-town in Staffordshire, a head-stone, with a doggerel couplet, points out his grave.

BILSTONE; a manufacturing town in Staffordshire, situated on the high road from London to Holyhead by Shrewsbury, distant from Wolverhampton, three miles S. E., from Stafford, nineteen miles S. by E., and from London, 120 miles, N. W. It owes its prosperity to the numerous and rich mines of coal and iron-stone in its vicinity. The principal manufactures consist in the heavier description of iron castings, machinery of all kinds, tin-plate, japanned and enamelled wares, nails, wire, and screws of iron, connected with which there are several collateral branches. Clay of a coarse kind, used for making pottery, and a kind of deep orange coloured sand which is found very useful in casting, are procured in abundance; there are also quarries from which grindstones of a superior quality are obtained. Coal mines are numerous and productive; and at Bradley, in the immediate vicinity, a stratum of coal about four feet in thickness has been burning for half a century, and has materially injured several acres of land. The Birmingham and Staffordshire canal passes near the town, and in the neighbourhood there are many other branches, through which a communication is opened towards every part of the kingdom, through the Mersey, Dee, Ribble, Ouse, Trent, Derwent, Severn, Humber, Avon, and Thames. The exports consist chiefly of coals and iron-work of all kinds. The markets are held on Monday and Saturday. Bilstone unites with the township of Wolverhampton in sending two members to parliament. Population in 1831, 14,492: in 1841, 20,181.

BIRMINGHAM (*a.*) Birmingham is mentioned in Doomsday book, under the name of Bermengeham. The name, as well as those of the neighbouring hamlets of Castle and West Bromwich, is supposed to have been derived from the abundance in which broom (Sax. *brom*) grows in the vicinity. Some antiquaries have supposed it to be the *Bre-*

*menium* of the Romans, others state that it was a British town of some importance, and celebrated for the manufacture of arms, previous to the Roman invasion, but very little is known of its early history. During the last four centuries it has been variously written Brumwychcham, Bromwycham, Brummagem, and Burmyngham, also with various transpositions of the vowels in the two first syllables. In the reign of Charles I., Birmingham distinguished itself in the parliamentary cause, and was the scene of some conflicts, in the last of which in 1643, it suffered considerably, having been taken, partially burnt, and a heavy fine inflicted on the inhabitants by Prince Rupert. This town was the scene of a series of riots in July, 1791, which commenced on the 14th and continued several days, during which much property was destroyed, including the house, library, and philosophical apparatus of Dr Priestley. As these riots furnish an instructive example of the dangers of popular ignorance, some account of them may be given here. The breaking out of the French Revolution occasioned in this country hopes and fears equally unfounded when carried to excess, as they frequently were, by bigotted or over-zealous individuals. The excitement into which the former were thrown prevented them from distinguishing the good from the bad in the institutions under which they lived: the latter class of persons indulged in expectations of a period of happiness and liberty altogether inconsistent with the existence of society. While these were the views under which the most violent partizans acted, the more sober portion of the community were in extreme agitation, and in this unhealthy state of public opinion, a trivial circumstance was calculated to produce much feverish and unwarrantable alarm among those whose views were not sufficiently clear-sighted to perceive the true nature of the events which were taking place around them, and who did not possess the wisdom to direct their consequences to useful ends. At this period there resided at Birmingham, Dr Priestley, who looked with hope to the spread of liberal sentiments being hastened by the great movement which was taking place in France. Writing to one of his friends, he said, "We are, as it were, laying gunpowder, grain by grain, under the old building of error and superstition, which a single spark may hereafter inflame, so as to produce an instantaneous explosion; in consequence of which that edifice, the erection of which has been the work of ages, may be overturned in a moment, and so effectually as that the same foundation can never be built upon again." By some means the above passage was made public, and it had the effect of exciting the enmity of all who clung, from a feeling of veneration, to the old institutions which they saw menaced. The transition was easily made from a defensive to an offensive position; and it was not long before the occasion arose for such a change being effected. The 14th of July, 1791, being the second anniversary of the taking of that old fortress of despotism, the French bastile, was fixed upon by one of the parties into which the town was divided as a day of rejoicing, and it was determined to celebrate it by a public dinner. The other party also resolved upon a counter display, and they, with very different sentiments, also resolved to get up a public dinner on the same day. A number of persons congregated during the evening around the head-quarters of each party;—rumours circulated among them, which they were too unenlightened to see the folly of, and they made an attack upon the house in which the party friendly to the French Revolution were assembled. The windows were soon demolished, and the rooms were searched by the rabble, who entered in the hope of laying hold of Dr Priestley; but he had not attended the dinner. The multitude then proceeded to the chapel in which he was accustomed to officiate, and in half an hour it was in flames. Afterwards they set out for Dr Priestley's residence, which was about a mile out of the town; they gutted it of the furniture, books, philosophical instruments, and manuscripts, on which he had spent some of the most valuable portion of his life. On the following day (Friday, July 15th,) a number of the respectable inhabitants assembled in St Philip's Churchyard to be sworn in as special constables; but they were but imperfectly organized, and the civil authorities did not display sufficient energy for the occasion. The mob, therefore, recommenced the work of destruction, but were at one time dispersed by the special constables. They however rallied again, and in a second attempt to disperse them one of the special constables was killed. No military force being present, the mob went on to exercise their mischievous power uncontrolled. About 10,000 of them proceeded to the house of Mr Ryland, at Easy Hill, and the premises were soon in flames. The wine-cellar was broken open, and many of the besotted rabble became intoxicated with its contents, and were in it when the roof and heated ruins fell to the ground. This day the places in which persons were confined for crime were broken open, and the inmates liberated. Barrels of ale were broached in the street before the houses of respectable persons who wished to propitiate the favour of the capricious body into whose hands the town had fallen. Mr Hutton was one of those who had placed a barrel of ale before his house to regale the mob. When it had been emptied, they proceeded to drag him out of the house, and compelled him to give them money, and, not content with his compliance, they confined him in a public house until they had drunk 329 gallons of ale at his expense, and afterwards exhibited their good faith towards him by destroying everything in his house to the minutest article. The rioters closed their proceedings this day by the destruction of Bordesley Hall, the residence of John Taylor, Esq. On Saturday the work of havoc was resumed. The house of Mr Hutton, at Bennett's Hill, and that of Mr Humphries, were first destroyed. At the latter place it was determined to make some defence, but the idea occasioned so much alarm among the female part of Mr Humphries' family that it was abandoned. As the family made their escape from the house the mob entered it, and the work of destruction was speedily completed. At the house of Mr W. Russel, at Showell Green, another attempt was made to withstand the mob, but without success. During the day the houses of Mr Hawkes, Lady Carhampton, Mr Hobson, Mr Pidarck, Mr Harwood, and Mr Coates, were destroyed. On Sunday morning the work of mischief was resumed by an attack on the house and chapel of Mr Cox, at Wharstock. The contents of the cellar were first drunk, and the house and premises were then set on fire, the mob waiting to see that the ruin was complete; after which they disposed of the meeting-house and parsonage-house of Kingswood in a similar manner. They then proceeded to Edgbaston Hall, where

they displayed their usual fury. At ten o'clock in the evening, three troops of cavalry had arrived at Birmingham, and on this intelligence being communicated to the rioters they discontinued their lawless operations. They did not, however, at once disperse, but, forming themselves into small bodies, levied contributions on hamlets and farm-houses, until finally the country people collected together in their own defence and dispersed the ruffians. During the riots, three of the persons who sustained the greatest damage to their property employed in their several concerns many hundred persons, who would be thrown out of employment by the derangement which such events occasion in manufacturing and commercial establishments. After a considerable interval all those whose property had been injured by the rioters recovered damages from the county to the extent of £26,961. Dr Priestley made his escape from his house with his wife and family. Before quitting his residence the fires were put out, in the hope that the mob, not finding immediate facilities for destroying the house, might be induced to relinquish the idea. This precaution, however, had not the desired effect, and the laborious task of hewing and tearing the house to pieces was quickly begun. Dr Priestley first retreated to Worcester, and afterwards to London, where he was appointed to succeed Dr Price, as the pastor of a congregation at Hackney. He finally quitted his native land in 1794, for America, where he purchased 200,000 acres of land on the banks of the Susquehannah, about 120 miles from Philadelphia. Here he spent the remainder of his days in retirement, and died February 6th, 1804, in the seventy-first year of his age. A tablet of white marble, with a suitable inscription, was erected to his memory at Birmingham, by the congregation over which he had presided.

The history of Birmingham, as the midland metropolis of art and manufacture, may be divided into three periods. The first period may be supposed to have terminated at about the restoration of King Charles II. Down to this time (the Restoration) though Birmingham had been a manufacturing town from unknown antiquity, her artisans, in general, kept themselves within the smoke of their forges, to execute such orders for implements of war, and husbandry, carpenters' and other tools, kitchen utensils, and such articles as might be periodically ordered of them, by those who required them, or by merchants or their itinerant agents. At the Restoration, therefore, may be said to commence the second period of the manufacturing history of Birmingham, when a travelled king and a luxurious court introduced a taste for articles of a more elegant and costly description than those that had been previously in demand, and Birmingham naturally took the lead in the manufacture of them. Thus she proceeded in her prosperous career of industry and skill to that important era—the discovery of the steam-engine. Although it was at Glasgow where Watt first made his great improvements on the steam engine, it was at Birmingham, or at least at Soho, in the vicinity of Birmingham, where these were first carried into successful practice. When Watt's partner, Dr Roebuck, became unable to render him the stipulated assistance in his undertakings in consequence of the pecuniary embarrassments which followed the failure of some mining speculations in which he had engaged, Watt was so much discouraged, that he was on the eve of abandoning the further prosecution of his plans. Mr Boulton had at this time become well known as one of the most intelligent and enterprising manufacturers in the kingdom; and, with the consent of Mr Watt, a negotiation was opened with him and was brought to a conclusion in 1773, when Dr Roebuck resigned his share of the steam-engine patent to Mr Boulton on terms very advantageous to himself. This was one of the most happy events in the career of Watt, for his new partner was a man of wealth and of great personal influence: "to a most generous and ardent mind," says Playfair, "he added an uncommon spirit for undertaking what was great and difficult. Mr Watt was studious and reserved, keeping aloof from the world; while Mr Boulton was a man of address, delighting in society, active, and mixing with people of all ranks with great freedom and without ceremony. Had Mr Watt searched all Europe he could not have found another person so fitted to bring his invention before the public in a manner worthy of its merit and importance; and, although of most opposite habits, it fortunately so happened that no two men ever more cordially agreed in their intercourse with each other." The value to Watt of such a partner as this may be best estimated by the fact, that the firm expended no less a sum than £47,000 on the speculation in Watt's steam-engines before they began to receive any remuneration. When Watt went to Birmingham, part of the establishment at Soho was appropriated to his use, and with the advantages he there enjoyed he soon produced some capital engines. They came but slowly into use, but in time found their way into the mines and manufactories all over the kingdom. It was ultimately found necessary to erect, at a convenient distance, an iron-foundry, to which comes a branch of the Birmingham canal, whereby coals, iron, sand, &c., were brought to a wet dock within the walls, and the engines and other heavy goods transported in boats to every part of the kingdom. The firm, however, did not confine its attention to the manufacture of engines, but devised means of applying their powers to various operations in the manufactures of Soho. Thus the extensive experience of the proprietors enabled them to apply a steam-power to the boring of cylinders, pumps, &c., to drilling, to turning, to blowing their melting-furnaces, and to whatever tended to render their manufactures more perfect and to abridge human labour. But of all the different processes conducted at Soho perhaps none have, first and last, attracted more attention than the application of steam to coining at the Soho Mint. The coining-mill, or engine, which Mr Boulton first established there in 1783, was afterwards much improved, and ultimately not only produced coins with astonishing expedition but with an accuracy which the coinage of this country had not previously exhibited. The engine in this mint, as thus improved, worked at once eight machines, each capable of striking from seventy to eighty-four pieces in a minute, or between 4000 and 5000 in an hour, so that the eight machines together would produce between 30,000 and 40,000 coins in one hour. The following are the processes executed by these machines as operated upon by the steam-engine:—rolling the masses of copper into sheets; fine rolling of the same cold through cylindrical steel-rollers; clipping the blank pieces of copper for the die; shaking the coin in bags; striking both

sides of the coin at once, and milling the edges. The improvement in the coin itself may be seen by a comparison of the copper coins before and since 1799, in which year Mr Boulton contracted for the copper coinage on his improved principle; since which time no alteration has taken place, except perhaps a little improvement in the finish. Of the produce of his mint the copper coins now in circulation are specimens; besides which copper has been coined by contract for the different European states, for the East India Company, and for the Americans. Mr Boulton's improvements in the coining mill, originally brought into operation at Soho, have also been adopted at the Tower Mint, and by various European governments. This has tended greatly to the improvement of the modern coinage, not only in copper, but in silver and gold, the same process being of course applicable to other metals. Indeed both gold and silver have on different occasions been coined at Soho, not to speak of the various exquisite medals which have from time to time been struck there. In short, Soho, although a nominally private concern, has, in point of fact, been an establishment of the very highest national importance; and this not only in its large operation upon the commercial interests of the nation, in extending the power of man, and in enlarging the comforts and conveniences of life, but also in improving the public mind by the encouragement it has given to artists of all descriptions, and by the healthy rivalry and competition in skill which is kept continually in exercise.

The prosperity of Birmingham has arisen from the extensive manufactures carried on in it, the abundance of coal and iron ore in the neighbouring districts, and the extent of its connections by inland navigation with every part of the kingdom. It has been celebrated for workers in iron since the time of Henry VIII., when Leland described it as inhabited by "smiths that use to make knives and all manner of cutting tools, and lorimers that make bittes, and a great many nailours." In former days, one of the most flourishing manufactures of Birmingham was that of the shoe-buckle. When this ornament was in fashion, about 2,500,000 pairs were annually made here, giving employment to about 5000 artisans. The buckle was worn for about a century in England. It was made in all shapes and sizes. The large square buckle, plated with silver, was the fashion of 1781, and was even adopted by the ladies. Early in the present century, the buckle became unfashionable, and it is now only to be occasionally seen on the shoes of very old men.

The button manufacture is an important branch of Birmingham manufacture. The manufacture comprises about sixty separate branches of handicraft, many of which are assigned to females and boys. The sweepings of the manufactory of the late Mr Taylor, where the costly metals were used, receiving the filings and minute particles which fly off during the various operations, are said to have been sold annually to the sweep-washer for £1000. In the manufactory of Messrs Heaton forty tons of button-shanks have been made annually; and the whole number of shanks made annually in Birmingham is estimated at 600,000,000.

"Birmingham (says the late Mr William Hutton, in his history of the town) began with the productions of the anvil, and probably will end with them. The sons of the hammer were once her chief inhabitants; but that great crowd of artists is now lost in a greater. Genius seems to increase with multitude. Part of the riches, extension, and improvement of Birmingham, are owing to the late John Taylor, Esq., who possessed the singular power of perceiving things as they really were. The spring and consequence of action were open to his view. He rose from minute beginnings to shine in the commercial, as Shakspeare did in the poetical, and Newton in the philosophical hemisphere. To this uncommon genius we owe the gilt button, the japanned and gilt snuff-boxes, with the numerous race of enamels. From the same fountain issued the painted snuff-box, at which one servant earned three pounds ten shillings per week, by painting them at a farthing each. In his shops were weekly manufactured, buttons to the amount of £800, exclusive of other valuable productions. One of the present nobility, of distinguished taste, examining the works with the master, purchased some of the articles; among others, a toy of eighty guineas value; and while paying for them, observed with a smile, 'he plainly saw he could not reside in Birmingham for less than two hundred pounds a-day.' Mr Taylor died in 1775, at the age of sixty-four, after acquiring a fortune of £200,000.

"The art of nail-making is one of the most ancient in Birmingham. It is not, however, so much a trade *in* as *of* Birmingham, for there are but few nail-makers left in the town; the nailers are chiefly masters, and rather opulent. The manufacturers are so scattered round the country, that we cannot travel far in any direction out of the sound of the nail-hammer. Birmingham, like a powerful magnet, draws the produce of the anvil to herself. When I first approached Birmingham (says Mr Hutton) from Walsall in 1741, I was surprised at the prodigious number of blacksmiths shops upon the road, and could not conceive how a country, though populous, could support so many people of the same occupation. In some of these shops I observed one or more females stript of their upper garment, and not overcharged with their lower, wielding the hammer with all the grace of the sex. The beauties of their face were rather eclipsed by the smut of the anvil. Struck with the novelty, I inquired 'Whether the ladies of this country shod horses?' but was answered with a smile, 'They are nailers.'"

Swords are supposed to have been made in Birmingham in the time of the Britons; but fire-arms are a comparatively modern invention, and the manufacture of them appears to have been almost, if not entirely, confined to London down to the revolution in 1688. The society of gun-makers was incorporated in the 13th Charles I. (1638) under the name of the Master, Wardens, and Society of Gun-makers of the city of London, from whose manufactories the parliamentary forces in the civil wars were supplied with fire-arms. But soon after the restoration, this branch of manufacture naturally found its way to Birmingham. From 1805 to 1815, 3,079,120 gun-barrels and 2,935,787 locks, for the use of government, were manufactured in Birmingham alone; of which, 1,820,889 were completed as muskets, carbines, &c. The supply was in general 30,000 stand of arms per month, or two in a minute! This number is exclusive of fire-arms manufactured there for the East India Company's service during the same period, to the number, as it has been calculated, of about 1,000,000: and exclusive, also, of trading guns, fowling-pieces, &c. The ordnance depart-

ment purchased some land in Banbury-street, Birmingham, on the hank of the canal, and erected a proof house for fire-arms, with an inspecting room, for the purpose of proving, inspecting, and marking, according to the provisions of an act of parliament, all gun-harrels, locks, hayonets, &c., fahricated in the town. This establishment was incorporated by the same act, and consists of the lords-lieutenant of the counties of Warwick, Worcester, and Stafford, the members of parliament for those counties, the high and low bailiffs of Birmingham, the acting magistrates within seven miles, and fifteen individuals connected with the gun manufacture in Birmingham. The huilding is called the Tower. All pieces are here put to a severe test, after which they are stamped, and may he exposed for sale. A heavy penalty is imposed upon persons who sell any fire-arms without having been proved. Before the close of the late war, no less than 14,500 stand of arms were delivered per week to the ordnance office from the manufactures in this town. Burke pronounced Birmingham the "toyshop of Europe," but this designation is hardly to be taken in its literal sense, for the articles of universal utility manufactured here, far exceed those intended for ornament and show. Of the smaller articles of manufacture, pins, small iron-ware, plated goods, jewellery, and toys of all descriptions, are extensively manufactured. At the pin-works, 12,000 pins can be cut and pointed, and 50,000 pin heads made from the wire in an hour. Factories for articles of a larger description are also numerous. Among these are iron and brass founderies, manufactories of steam-engines, machinery of every description, and metallic hot-houses. There are some extensive glass works for the manufacture of crystal, as well as of the coarser kinds of glass.

Birmingham originally consisted of but one parish, that of St Martin, a portion of which was separated in the year 1715, for the erection of the parish of St Philip. Those of St George and St Thomas were formed in 1829. These parishes are all within the archdeaconry of Coventry and diocese of Lichfield and Coventry, and for all civil purposes Birmingham is still considered as one parish.

Among the public huildings of Birmingham, that of the town-hall, recently erected for municipal purposes, for public meetings, and for musical performances, is the most splendid. Its elevation consists of a series of Corinthian pillars resting on a rustic arcade. The internal arrangement of this building exhibits a large saloon or hall, 140 feet in length, sixty-five feet wide clear of the walls, and sixty-five feet high from floor to ceiling, with corridors of communication running along on each side of it on its own level, and staircases leading to upper corridors to give access to galleries. The corridors are low, the two tiers being within the height of the basement externally. As the hall is intended principally for musical entertainments, one end of it is occupied by a magnificent organ and surrounding orchestral arrangements. This organ is of enormous dimensions, and has cost £3000. Two narrow galleries run along the sides of the hall, and a large deep gallery occupies the other end; rooms for the accommodation of the performers who may he employed are formed at the upper end of the building and under the orchestra. The building is lengthened externally to 160 feet by the projection of the arcaded pavement in front to Paradise street, over the causeway. The height of the basement above the causeway is twenty-three feet,—the columns resting upon its upper surface or platform are, with their entahlature, forty-five feet, and the pediment forming the frontispiece is fifteen feet high,—making a total height of eighty-three feet from the causeway to the acroterium. The columnar ordinance employed is in imitation of the Roman foliated or Corinthian example of the temple of Jupiter Stator; the columns are fluted, and the entablature is greatly enriched, though not to the full and elaborate extent of the original. The structure is of brick, faced with Anglesea marble, of which latter material the columns and their accessories are composed. The bricks were made on the spot of the earth taken out of the foundation. The stones were cut and worked by machinery with steam power, the flutings were made by the same means, and by the application of an invention, it is understood, of one of the contractors. Another ingenious invention, consisting of a species of craning lever-beam on rollers, was applied for the purpose of hoisting the framed tie-heams and principals of the roof from the ground up to the walls. The time given for the completion of the edifice was eighteen months, and the total cost was to be £18,000, though it is understood that the marble used in it has been supplied by the proprietor of the quarries free of cost, for the purpose of bringing the article into public repute. The design for the Birmingham town-hall was supplied by Messrs Hanson and Welsh of Liverpool, who were also the contracting builders for carrying it into execution.

The width of the Birmingham organ, which is perhaps the finest in Europe, is thirty-five feet; the depth fifteen, and the height forty-five. The swell-hox, or receptacle for the pipes used for the swell only, is of the size of an ordinary church-organ. The largest central pipe is thirty-five feet long, and rather less than twenty-one inches in diameter; but, of course, the sounding part of this pipe only extends thirty-two feet in length. The foot of this pipe is four feet in length, and weighs not less than 224 lbs. The metal pipes of large dimensions are made entirely of zinc. There are four rows of keys, and one extensive set of pedals, or foot-keys, and five common bellows to give wind to the forest of pipes. In the swell-box a set of bells (*carillons*) has been placed, which appears to be a greater novelty than improvement. By an ingenious mechanical contrivance, it is arranged that all the various stops of the instrument may be combined on any one of the *claviers*, or sets of keys, by which the power of producing grand effects is almost infinitely extended. In this organ there is a reed stop, called the *Posaune* or trombone, which all who are acquainted with the organs of the continent consider to be the most powerful and the richest in tone of any existing. The powerful volume of sound proceeding from this stop is mingled with a mellowness which corrects the unpleasant impression which loudness occasionally produces. The assistance afforded by these pipes to the voices in the choruses cannot easily be estimated hy those who have not heard it. It may fairly be stated that, while the *Posaune* renders the most effectual aid in blending the voices into one mass, it adds at least fifty per cent. to their power. This stop alone is sufficient to render the organ remarkahle; and much of the superiority of the choral effects at the Birmingham festival, above those produced at the commemoration in West-

minster Abbey, is attributed to the power of this splendid stop. The builder of this grand instrument was Mr Hill, of London. The case of the instrument is from a design by Mr Mackenzie, and perfectly harmonizes with the architectural style of the building in which it is placed. It is calculated that the timber alone employed in the construction of this organ would weigh between twenty and thirty tons, while the metal and other materials of the structure would raise the weight of the whole to at least forty tons.

By the reform bill Birmingham was invested with the right of sending two members to parliament. The limits of the borough comprise the parishes of Birmingham and Edgbaston, and the townships of Bordesley, Deritend, and Duddeston with Nechels. The number of houses worth £10 a year within this limit was, in 1831, about 7000, and the total number of houses 30,000.

Birmingham has two roads communicating with the metropolis; one passing through Banbury and Warwick, the distance by which is 119 miles; and the other is the great road from London to Holyhead, which is nine miles shorter. The distance from London to Birmingham in a direct line is 102 miles. Birmingham is in the very centre of the canal system, to which indeed it has been indebted for a great measure of its prosperity. One canal communicates with the Severn, another with the Trent and Mersey, a third line with the Thames; so that the products of its industry can be conveyed in an economical manner to the ports of London, Liverpool, Bristol, and Hull. The railway from London to Birmingham, and from Birmingham to Manchester, recently completed, still further accelerates the activity of Birmingham, and affords increased facilities for intercourse with it. The line passes through Watford and Rugby. Projects are now on foot for extending it as far as Glasgow; and, when this is accomplished, it will form, from the magnitude of the places it connects, the principal thoroughfare of the kingdom. A journey from Glasgow to London will then be performed in eighteen hours.

In 1783, Hutton estimated that there were at that time in Birmingham 209 persons worth £2,500,000, viz.:—

| | | | | |
|---|---|---|---|---|
| 3 | persons, | each | possessing | £100,000 |
| 7 | — | — | — | 50,000 |
| 8 | — | — | — | 30,000 |
| 17 | — | — | — | 20,000 |
| 80 | — | — | — | 10,000 |
| 94 | — | — | — | 5,000 |

In 1828, Mr James Luckcock made a calculation of the wealth of the town, which he estimated at £10,000,000 viz.:—

| | | | | |
|---|---|---|---|---|
| 1 | person | possessing | | £400,000 |
| 2 | — | — | (each) | 300,000 |
| 3 | — | — | — | 200,000 |
| 4 | — | — | — | 150,000 |
| 5 | — | — | — | 100,000 |
| 6 | — | — | — | 80,000 |
| 10 | — | — | — | 50,000 |
| 20 | — | — | — | 30,000 |
| 30 | — | — | — | 20,000 |
| 50 | — | — | — | 15,000 |
| 70 | — | — | — | 10,000 |
| 100 | — | — | — | 5,000 |
| 200 | — | — | — | 2,000 |
| 400 | — | — | — | 1,000 |
| 1000 | — | — | — | 200 |
| 2000 | — | — | — | 250 |
| 3000 | — | — | — | 100 |
| 4000 | — | — | — | 50 |
| 5000 | — | — | — | 25 |
| 5000 | — | — | — | 15 |

In 1801 the population of Birmingham and the suburbs was 73,670, and it was only exceeded in this respect by Manchester, Glasgow, and Liverpool. In 1811 the population of Birmingham had increased to 85,753; in 1821 to 106,721. At the census taken in May, 1841, Birmingham contained 87,483 males and 93,633 females, making a total population of 181,116. It still held the rank which it occupied when the census of 1801 was taken; and though it had not increased in so rapid a manner, its progress had been more steady. From 1801 to 1811 the increase was 16 per cent., and for the two following decennial periods it was twenty-four and thirty-three per cent. respectively. The following is a table of the number of baptisms, burials, and marriages registered in Birmingham for the ten years ending in 1830:—

| Years. | Baptisms. | Burials. | Marriages. |
|---|---|---|---|
| 1821 | 2998 | 1775 | 1193 |
| 1822 | 5523 | 1764 | 1181 |
| 1823 | 2790 | 1943 | 1321 |
| 1824 | 3058 | 2178 | 1582 |
| 1825 | 3283 | 2242 | 1832 |
| 1826 | 2777 | 2235 | 1366 |
| 1827 | 3568 | 2084 | 1463 |
| 1828 | 4749 | 2310 | 1525 |
| 1829 | 4313 | 1941 | 1474 |
| 1830 | 4472 | 2138 | 1571 |

The number of persons who died above the age of ninety-five during the above ten years was forty-eight, of whom there were eleven aged ninety-eight; six aged a hundred; four 101; two 102; four 103; two 104; one 109; and one aged 114. The rate of mortality among children under five years is 44 per cent., *i. e.* less than one-half, and somewhat fewer than in the towns of Liverpool, Nottingham, and Leeds, where the proportion per cent. is respectively as follows:—Liverpool, 46 per cent.; Nottingham, 48 per cent.; and Leeds, 49 per cent. The longevity of the inhabitants is remarkable, as will be seen by the following statement:—Proportion of deaths per cent., from 1821 to 1830, of persons aged between ninety and ninety-nine:—Birmingham, 90 per cent.; Hull, 96; Halifax, 98; Somersetshire, 96; Dorsetshire, 98. The longevity of the inhabitants of Birmingham exceeds even that of the county population, the proportion in the latter case being 95 per cent., and at Birmingham 90.

In December, 1837, when the registration act had been exactly six months in operation, the population of the parish of Birmingham amounted to 145,800. The number of births within this period was 1582, and of deaths, 1458. Mr Pare, the superintendant registrar of the Birmingham district, has given tables showing the age of each individual at the time of death, and the diseases or causes of death. Both these points are of the utmost importance, and are safe guides in estimating the habits and condition of any particular section of the population. In Mr Pare's tables, 341 deaths are attributed to consumption; 202 to inflammatory complaints; 89 to small pox; 82 to decay of nature or old age; 79 to fever; 69 to convulsions; 67 to dropsy; 44 are violent deaths; and the ravages of each type of disease are similarly discriminated. The number of children who died under the age of three months was 190; or under one year 366, which is one-fourth of the whole number of deaths. Mr Pare has not been content with instituting comparisons between his own district and the general results which the census of 1831 present, but has obtained from another registrar, Dr Johns, of Manchester, a statement of the movement of the population in that district between the 1st of July and the 31st of December last. With these materials before him, which so far as regards the number of deaths may be entire.

depended upon, Mr Pare has drawn the following interesting points of comparison between Manchester and Birmingham:—1. In Birmingham *one-fourth* of the whole number of deaths take place within the year, whilst in Manchester upwards of *one-third* die within the same age. 2. In Birmingham *three-sevenths*, and in Manchester *four-sevenths*, of the whole number of deaths take place within the fifth year. 3. In Birmingham one-half the population attain their *sixteenth* year, whilst in Manchester one-half the population die within the first *three* years. 4. In Birmingham twice as many people survive the age of *seventy* as in an equal population in Manchester. 5. From these several comparisons it appears that the value of human life is much greater in Birmingham than in Manchester, arising in part, no doubt, from the superiority of its geographical position, but mainly from the superior nature of the employments, and better habits of its work-people. As to the diseases or causes of death, Mr Pare shows that by far the largest number of deaths are occasioned by consumption in both towns, being about equal in each, in proportion to the population, or nearly *one-fourth* of the whole number.

BIRNIE, Sir Richard, Knight, chief magistrate of the public office in Bow Street, was a native of Banff, in Scotland, and was born of comparatively humble but respectable parents. He was bred to the trade of a saddler, and, after serving his apprenticeship, came to London, and obtained a situation as journeyman at the house of Mackintosh and Co., who were then saddle and harness makers to the royal family, in the Haymarket. He soon recommended himself to the favourable notice of his employers by his application and industry. His subsequent advancement in life, however, may be attributed in some degree to accident. The foreman, as well as the senior partner in the firm, being absent from illness at the same time, and a command being received from his royal highness the prince of Wales for some one to attend him to take orders to a considerable extent on some remarkable occasion, young Birnie was directed to attend his royal highness. The orders of the prince were executed so completely to his satisfaction, that he often afterwards, on similar occasions, desired that the "young Scotchman" might be sent to him. At that period, Sir Richard was the occupant of a furnished apartment in Whitcomb Street, Haymarket. By the exercise of the diligence, perseverance, and honesty, for which so many of his countrymen have been remarkable, he at length became foreman of the establishment of the Messrs Mackintosh, and eventually a partner in the firm. During the progress of these events he became acquainted with the present Lady Birnie, the daughter of an opulent baker in Oxendon Street, and married her, receiving in her right a considerable sum in cash, and a cottage and some valuable land at Acton, Middlesex. He then became a housekeeper in St Martin's parish, and soon distinguished himself by his activity in parochial affairs. He served successively, as he has often been heard to state with exultation, every parochial office except those of watchman and beadle. During the troublesome times of the latter part of the Pitt administration he was a warm loyalist, and gave a proof of his devotion to the "good cause," by enrolling himself as a private in the Royal Westminster Volunteers, in which corps, however, he soon obtained the rank of captain.

After serving the offices of constable, overseer, auditor, &c., in the parish, he became, in the year 1805, churchwarden; and in conjunction with Mr Elam, a silver smith in the Strand, his co-churchwarden, and Dr Anthony Hamilton, the then vicar of St Martin's parish, founded the establishment, on a liberal scale, of a number of alms-houses, together with a chapel, called St Martin's Chapel, for decayed parishioners, in Pratt Street, Camden Town, an extensive burying ground being attached thereto. St Martin's parish being governed by a local Act of Parliament, two resident magistrates are necessary; and Mr Birnie was, at the special request of the late Duke of Northumberland, placed in the commission of the peace. From this time, he betook himself to frequent attendances at Bow Street office, and the study of penal statutes and magisterial practice in general. He was in the habit of sitting in the absence of Sir Richard Ford, Mr Graham, and other stipendiary magistrates of the day, and was considered an excellent assistant. He was at length appointed police magistrate at Union Hall, and, after some few years' service there, was removed to Bow Street Office, to a seat on the bench, to which he had long most earnestly aspired. In February, 1820, he headed the peace-officers and military in the apprehension of the celebrated Cato Street gang of conspirators. Sir Nathaniel Conant, the chief magistrate, died shortly after, and Mr Birnie was greatly chagrined at the appointment of Sir Robert Baker, of Marlborough Street, to the vacant office, saying, to a brother magistrate publicly on the bench, the tears starting from his eyes, "This is the reward a man gets for risking his life in the service of his country!" He soon afterwards, however, attained what might be fairly said to be the summit of his ambition. In August, 1821, at the funeral of Queen Caroline, Sir Robert Baker having declined reading the Riot act, which Mr Birnie deemed necessary, in consequence of the disposition which the mob evinced to riot, Mr Birnie took the responsibility on himself, and read it. Sir Robert retired from the chair immediately afterwards, having given great offence to the ministry by his want of decision; and Mr Birnie was appointed to the office of chief magistrate, and had the honour of knighthood conferred upon him on the 17th of September following. Sir Richard was an especial favourite with George IV. He was ever ready to assist the needy, especially where he discovered a disposition to industry. In all matters of importance connected with the peace and welfare of the metropolis, it was the custom of those who filled the highest offices in the state to consult him. He was always remarkable for his close application to business. He died on the 29th April, 1832, aged seventy-two. Sir Richard left a son and two daughters.

BLACKBURN; a large market-town of England, in the county of Lancaster, 208 miles N. W. from London, thirty S. E. from Lancaster, and twenty-three NN. W. from Manchester. It stands on a small stream anciently called *Blakeburn*, i. e. yellow stream; and is sheltered by hills stretching from the N. E. to the N. W. The country around is a barren sandy flat, which, however, has been much improved by cultivation. It has been a market-town since the reign of Elizabeth. The streets are very irregularly built, partly owing to the intermixture of glebe and other lands; but they contain many good houses, and are paved, lighted with gas, and watched under the provisions

of an act of parliament. There is a good supply of water. A theatre was erected here in 1818, and there are assembly-rooms, and a subscription library. The manufacture of cotton is the principal business of the place. James Hargrave, who made some important improvements on the spinning machinery, was a carpenter of Blackburn. The trade is facilitated by the Leeds and Liverpool canal, which passes near the town, affording communication with an extensive line of inland navigation, and with the rivers Mersey, Dee, Ouse, Trent, Humber, Severn, and Thames. Population of the town in 1841, 36,629.

The *parish* of Blackburn is fourteen miles long by ten broad. It contains 71,711 inhabitants, and comprises twenty-three townships, viz., the market-town of Blackburn, and the townships of Balderston, Billington, Great Harwood, Over Darwen, Salisbury, Samlesbury, Tock-holes, Walton-le-dale, Clayton-le-dale, Cuerdale, Lower Darwen, Dinkley, Eccleshill, Little Harwood, Livesley, Mellor, Osbaldeston, Pleasington, Ramsgrave, Rishton, Wilpshire, and Witton. Under the reform act, Blackburn returns two members to parliament. The number of electors is between six and seven hundred.

BLACKHEATH; an elevated heath in the vicinity of London, in the county of Kent, from various parts of which there are fine views of Greenwich hospital, Greenwich park, the river Thames, and London in the distance. On this heath and its vicinity there are many handsome villas, and residences of the nobility and gentry. Among these are the villas of the princess Sophia, Lord Lyttleton, the duke of Buccleugh, the earl of Dartmouth, &c. The finest building on the heath was the splendid mansion of Sir Gregory Page, which was sold by auction to various purchasers, and rased to the ground. Its site is now occupied by a number of cottages. Here are two episcopal chapels, the one in the parish of Lewisham, and the other in an extra-parochial place called Kidbrook. There are several schools here. From its vicinity to London, Blackheath has been the scene of some memorable transactions. In the reign of Richard II., the insurgents under Wat Tyler assembled here, as did Jack Cade and his followers in 1451. Foreign ambassadors have been met here in great pomp, and the corporation of London received Henry V. at this place on his return from the battle of Agincourt. The Cornish rebels under Lord Audley were met here, and vanquished by Henry VII., in 1497.—In the immediate vicinity of the heath, towards Deptford, a cavern consisting of several chambers has been discovered. Its use has not been ascertained, but it is supposed to have been intended as a retreat during the struggles of the Danes and Saxons.

BLACKWOOD, William, an eminent bookseller in Edinburgh, the projector, and for many years the conductor, of the popular magazine which bears his name, was born in Edinburgh, on the 20th of November, 1776. Although his parents were in a much humbler station of life than that which he himself ultimately occupied, he received an excellent early education; and it was his boyish devotion to literature which determined the choice of his calling. In 1790, when he was fourteen years of age, he entered on his apprenticeship with the well-known house of Bell and Bradfute; and, before quitting their roof, largely stored his mind with reading of all sorts, but especially Scottish history and antiquities. When he had been six years with Messrs. Bell and Bradfute, he went to Glasgow to be manager for Mr Mundell, then in extensive business as a bookseller and university printer. Mr Blackwood had the sole superintendence of the bookselling department; and he always spoke of the time he spent in Glasgow as having been of the greatest service to him in after-life. Being thrown entirely on his own resources, he then formed those habits of decision and promptitude for which he was subsequently so remarkable. He also corresponded regularly with Mr Mundell and his friends at home, —a usage from which he derived great benefit in the formation of that style of letter-writing, which, in the opinion of many competent judges, has seldom been surpassed. Mr Mundell, however, gave up business in Glasgow; and, at the expiration of a year, Mr Blackwood returned to Messrs. Bell and Bradfute. In 1799, he entered into partnership with a Mr Ross, which connection was, however, dissolved in a few years. He then went to London; and, in the shop of Mr Cuthell, perfected himself in the knowledge of old books.

In 1804, Mr. Blackwood returned to Edinburgh, and commenced business on his own account, on the South Bridge, as a dealer in old books, in the knowledge of which he had by that time few equals. He soon after became agent for Murray, Baldwin, and Cadell, and also published on his own account; among other works "Grahame's Sabbath," "Kerr's Voyages," the "Edinburgh Encyclopedia," &c. In 1812 appeared his famous catalogue, consisting of upwards of fifteen thousand books in various languages, all classified. For many years Mr Blackwood confined his attention principally to the classical and antiquarian branches of his trade, and was regarded as one of the best-informed booksellers of that class in the kingdom; but on removing to the New Town of Edinburgh, in 1816, he disposed of his stock, and thenceforth applied himself, with characteristic ardour, to general literature, and the business of a popular publisher.

In April 1817, he put forth the first number of "Blackwood's Magazine," the most important feature of his professional career. He had long before contemplated the possibility of once more raising magazine literature to a rank not altogether unworthy of the great names which had been enlisted in its service in a preceding age: it was no sudden or fortuitous suggestion which prompted him to take up the enterprise in which he was afterwards so pre-eminently successful as to command many honourable imitators. From an early period of its progress, his magazine engrossed a very large share of his time; and though he scarcely ever wrote for its pages himself, the general management and arrangement of it, with the very extensive literary correspondence which that involved, and the constant superintendence of the press, would have been more than enough to occupy entirely any man but one of first-rate energies. No man ever conducted business of all sorts in a more direct and manly manner. His opinion was on all occasions distinctly expressed; his questions were ever explicit; his answers conclusive. His sincerity might sometimes be considered rough: but no human being ever accused him either of flattering or of shuffling; and those men of letters who were in frequent communication with him soon conceived a respect for and confidence in him, which, save in a very few instances, ripened into cordial regard and friendship. The masculine steadiness and imperturbable resolution of his character were impressed on all his pro-

ceedings; and it will be allowed by those who watched him through his career, as the publisher of a literary and political miscellany, that those qualities were more than once very severely tested. He dealt by parties exactly as he did by individuals. Whether his principles were right or wrong, they were *his*, and he never compromised or complimented away one tittle of them. No changes, either of men or of measures, ever dimmed his eye, or checked his courage. To youthful merit he was a ready and a generous friend; and to literary persons of good moral character, when involved in pecuniary distress, he delighted to extend a bountiful hand. He was in all respects a man of large and liberal heart and temper.

During some of the best years of his life he found time, in the midst of his own pressing business, to take rather a prominent part in the affairs of the city of Edinburgh, as a magistrate; and it must be admitted by those who most closely observed, and even by those who most constantly opposed him in that capacity, that he exhibited, on all occasions, perfect fairness of purpose, and often, in the conduct of debate, and the management of less vigorous minds, a very rare degree of tact and sagacity. His complete personal exemption from the slightest suspicion of jobbing or manœuvring was acknowledged on all hands; and, as the civic records can show, the most determined enemy of what was called *reform* was, in his sphere, the unwearied, though not always the triumphant, assailant of practical mischiefs.

Mr Blackwood died at his house in Ainslie Place, Edinburgh, on Tuesday the 16th of September, 1834, in the fifty-eighth year of his age. His two eldest sons continue the bookselling business.

BLAIR ATHOLE; a parish in Perthshire, Scotland, about thirty miles in length and eighteen in breadth. The district is very rugged and bleak in the mountainous parts, but very beautiful in that part which is more properly *Blair* Athole—namely, the valley around Athole house, which is situated on the bank of the Tilt, near its confluence with the Garry. —(See *Athole* in Encyclopedia.) The view of the country from the opening of the Pass of Killiecranky is one of the finest in Scotland, comprising a striking variety of mountain and valley. The village of Blair-Athole stands to the north of Athole house, on the road from Edinburgh to Fort Augustus, from which a road diverges at this point to Brae-Mar. It is twenty miles north of Dunkeld. In the church of Blair-Athole lie the remains of John Graham of Claverhouse, Viscount Dundee, who fell at the battle of Killiecranky, July 26, 1689.—Population in 1821, 2493; in 1831, 2779; in 1841, 2231.

BLANCHARD, William, an eminent comedian, was a native of York, where he was brought up by an uncle, the printer of one of the newspapers, who apprenticed him to the same business. At the age of seventeen, however, he left home to join a company of comedians at Buxton, in Derbyshire, then under the management of Mr Welsh. He made his debût under the assumed name of Bently, in the part of *Allen a Dale*, in "Robin Hood," and a favourable reception induced him to pursue his theatrical career. His success continuing, he was induced after a year or two to appear in his proper name, and performed some of the most usual tragic characters, as Romeo, Young Norval, Barnwell, &c. When he had attained the age of twenty, he became a manager on his own account, and opened theatres at Penrith in Cumberland, Hexham in Northumberland, and Barnard Castle, and Bishop's Auckland in Durham. After a few seasons he relinquished management, a poorer man than when he commenced. In 1793, he was engaged by Mr Brunton, for the Norwich company; in which he had abundant opportunities for the display of his talents. In particular his performance of rustic characters, old men, smart servants, sailors, &c. obtained him applause, and rendered him an established favourite throughout that circuit. His increasing reputation attracted the attention of the managers of Covent Garden, who at once engaged him for five years, commencing with the season of 1800. On the 1st of Oct. he made his first bow to a London audience, in the characters of *Acres* in "The Rivals" and *Crack* in "The Turnpike-gate." His correct delineation of the numerous characters which he successively assumed in play, farce, and opera, made him a universal favourite. His Fluellen, Menenius, Polonius, Pistol, Sir Andrew Aguecheek, Sir Hugh Evans, and many others, were evidences of the soundness of his judgment and versatility of his talents. He died at Chelsea, 9th May, 1835, aged 66.

BLANE, Sir Gilbert, of Blanefield, Ayrshire, and Culverlands, Berkshire, Bart. M. D., Physician in Ordinary to the King, Fellow of the College of physicians and of the Royal societies of London and Edinburgh, Member of the Imperial Society of Sciences at St Petersburg, &c. was the fourth son of a family of opulent Scottish merchants, one of whom, Thomas, was some time settled in London; and William, junior to Sir Gilbert, purchased the estate of Wingfield Park, Berks. Sir Gilbert was born at Blanefield, Ayrshire, Aug. 29, (O. S.) 1749. He commenced life as a navy surgeon, and was present at the engagement between the English and French fleets in the West Indies, on the 12th of April, 1782, of which he wrote an account—we believe his first published work. He shortly after published a valuable work, entitled "Observations on the Diseases incident to Seamen." He rose gradually in his profession, until he attained the rank of physician to the fleet, and was honoured with the acquaintance and friendship of his late Majesty. In 1788 he was selected to deliver the Croonian lecture, on muscular motion, before the Royal Society, which lecture was published in 1790. We also find in their transactions, vol. 80., an account by him of the Nardus Indica or spikenard; in which paper he attempted to collect what was known by the ancients respecting this odoriferous herb. His ideas respecting medical education, and certain topics connected with it, he gave to the world in 1819, under the title of "Medical Logic," and the work has run through several editions. In 1822, he published "Select Dissertations on several Subjects of Medical Science," most of which, we believe, had before appeared as separate papers in some of the medical periodicals. For some time he had retired from public life, when we find him once more coming forward in 1831, and addressing his "Warning to the British Public against the alarming Approach of the Indian Cholera." These, with some pamphlets on subjects of ephemeral interest, and contributions to medical periodicals, constitute, we believe, the whole of his literary labours. Sir Gilbert Blane was for some time physician to St Thomas's Hospital; and having been appointed successively physician to the household, and one of the physicians in ordinary to his late Majesty,

was created a Baronet by patent, dated Dec. 26, 1812. In Nov. 1829, with the sanction of the lords of the admiralty, he founded a prize medal for the best journal kept by the surgeons of his Majesty's navy. The medal is awarded every second year, the commissioners selecting four journals.—Sir Gilbert during his life, and thenceforth the president of the college of physicians, and the president of the college of surgeons, deciding which of such four is best entitled to this honorary distinction. This judicious institution is calculated to excite considerable emulation in the medical departments of the navy; and, by bringing the journals from time to time before the notice of the board, insure to the most deserving the promotion which, in this most important branch of the public service, is, or ought to be, given only to merit. He married, July 11, 1786, Elizabeth, only daughter of Abraham Gardner, merchant; and by that lady, who died on the 9th of July 1832, he had six sons and three daughters. He himself died on the 27th June 1834, aged 85. His eldest son, Gilbert Gardner Blane, Esq., died in February 1833, aged 45. His second son, Lieut. George Rodney Blane, of the Bengal engineers, died on the 18th of May 1821. His successor in the title, the present Sir Hugh Seymour Blane, served with distinction at Waterloo, as an officer of the 3d guards. He is married, and has issue. Sir Gilbert has left one other son, Charles Collins. His daughter Louisa was accidentally drowned in a piece of water on her uncle's estate at Winkfield park, Aug. 24, 1813, aged 19. The others died in infancy.

BLARNEY; a village in the county of Cork, five miles from the city of Cork, containing by the last census 253 inhabitants. The castle of Blarney was built in the 15th century. It was purchased in 1701 by Sir James Jefferys, governor of Cork, who soon after erected a large and handsome house in front of it, which was the family residence for many years, but is now a ruin. The "Groves of Blarney," celebrated in Irish song, are of considerable extent, and very interesting. In the highest part of Blarney castle, is a stone usually pointed out to the visitor, which is said to have the power of imparting to the person who kisses it the privilege of hazarding, without a blush, that species of romantic assertion which many term falsehood. Hence the phrase of blarney, applied to such violations of accuracy in narration.

BLIND. (*a.*) The effects of blindness upon the physical man, whatever they may be upon the intellectual, are decidedly pernicious; not directly and necessarily, but, nevertheless, almost inevitably. The mind is not called into action, the muscular power is not developed by exercise and labour, the sufferer dares not run about and play with his comrades; he cannot work in the open air, nor get the healthful movement which is necessary to bring the frame to the temper that will enable it to wear well in after life; and it consequently soon wears out. Hence we see so many of the blind, who were comparatively intelligent and active in childhood, gradually drooping through youth into premature old age; becoming first inactive, then stupid, then idiotic, and finally going down to an early grave with the light of intellect completely extinguished, and enveloped in both physical and intellectual darkness. This is purely the effect of physical inaction; and this inaction always must have this effect; hence so few strong men are found among the blind,—hence so many weak and helpless ones. The development of some of the particular powers seems also to be affected by blindness: this is particularly observable in regard to the sexual propensity, which, while it is particularly strong in the deaf, is weak in the blind; and for the very obvious reason that the imagination is fed in the one case by the sight, and in the other is not. The same principle which causes the physical inability of the blind, contributes mainly to the perfection of the senses which they possess, for these are called into strong and continual action. The touch, the hearing, and the smell of the blind, sometimes become so acute that they differ as widely from the same senses in the state in which we possess them, as does the scent of the spaniel from that of the greyhound.

It is a popular, but unphilosophical saying, that when "we are of one sense bereft, it but retires into the rest." The blind man does not hear any better, merely because he has not the sense of sight; but because his peculiar situation and wants oblige him to cultivate his ear; just as the sailor acquires a power of descrying vessels at a distance, which is unattainable by the eye of a landsman. The hearing is the sense which seems to us the most changed in the blind, although we are aware that many people, and even many of the blind themselves, say it is the touch. May we not, however, call all the senses mere modifications of the sense of touch? What is *touch?* Lexicographers call it the sense of feeling; now this sense of feeling is inherent in a greater or less degree in every part of the surface of the body; in the lips it is very acute, in the ear it is still more so, and the undulations of the air, striking upon the apparatus of hearing, are felt, just as the pressure of a hard substance is by the rest of the body. Is not the power of vision, too, dependent on the touch? The rays of light strike upon the *retina*, and we *feel* colour. The taste is decidedly a modification of touch, and the power of distinguishing the physical qualities of bodies by the lips and tongue is very striking in the blind. People are not generally aware of the powers of the ear: blind men, for instance, have been known, who could not only ascertain the shape and dimensions of an apartment by the sound of their voice, but who could, on entering one with which they were familiar, tell by striking their cane on the floor, and listening to the echo, whether any of the large articles of furniture had been removed from it, or shifted from their usual places. What seeing person would think it possible with his eyes bandaged, to tell which was the tallest, and which was the shortest of a number of speakers, merely by the direction in which the sound came from their mouths to his ear? Yet many blind persons can not only do this, but can ascertain very nearly the ages of the persons. There is no doubt that the voice is changed with every changing year; we seize only upon the extremes of the chain; we can tell the shrill scream of the child, from the rough firm voice of manhood, and the trembling tones of old age; but besides these,—besides the difference in the volume and pitch which exists between the voices of different persons, there is another produced by the course of years; and time stamps his impress upon the voice, as surely as upon the face. The blind man tests these by his practised ear, and not only can ascertain with tolerable correctness the age of the speaker, but pronounce upon his height, dimensions of his chest, and so forth. Nor is this the

most extraordinary part of the discriminating power of some blind men, who seize upon the slight variations of the intonation of the voice, as we do upon the changes of the countenance, and judge by them of what is passing in the mind of the speaker. We all of us wear at times a mask upon the countenance, and draw the curtain of hypocrisy over this window of the soul, to conceal what is going on within; but we seldom think of the voice; and it is upon this that the blind man seizes, as upon a thread, to direct him to the seat of the passions. Hence it is, that some of them can ascertain on so short an acquaintance the disposition and character of persons: they are not imposed on by the splendour of dress, they are not prejudiced by an ungainly air, they are not won by a smile, nor are they dazzled by the blaze of beauty or led captive, as many are wont to be, by the fascination of a lovely eye. The voice is to them the criterion of beauty, and when its melodious tones come forcibly stamped with sincerity from the soul, their imaginations at once give to the speaker a graceful form, and a beautiful face. It is recorded of the father of Fletcher the novelist, that he was long continued in the post of judge in the police court of London, after he became blind; and that he knew the voices of more than three thousand of the light-fingered gentry, and could recognise them at once when brought in.

The ear of some animals is surprisingly acute, and there is no doubt that it is improved by blindness; we know of a horse who, after becoming blind, evidently had his hearing very much sharpened, for when feeding in the pasture with others, far from the road, he would hear the sound of hoofs, and raise his head and whinny out his salute long before his companions betrayed any consciousness of the approach of the passing stranger. So with the blind man, when he is walking along the street he can tell whether it is wide or narrow, whether the houses are high or low, whether an opening which he may be passing is a court closed up at the end, or whether it has an outlet to another street; and he can tell by the sound of his footsteps in what lane, or court, or square he is. He goes along boldly, seeming to see with his ears, and to have landmarks in the air. The accuracy of the ear gives to blind persons a very great advantage in music; they depend entirely upon it; and hence they harmonize so well together, and keep such perfect accord in time, that Paganini, after listening to some pieces performed by pupils of the institution for the blind in Paris, declared that he never before had an adequate notion of what harmony was.

The touch is capable of being equally perfected, and many remarkable instances are given of this. Sanderson, the blind professor of mathematics in the university of Cambridge, became such a connoisseur of ancient coins, that he could detect the modern counterfeits, even when good eyes were puzzled about them. There lived a few years ago a blind man in Austria, who executed very good busts by feeling the faces of persons, and imitating them; and there is now a bust of the late emperor, executed by this blind man, and preserved in the museum in Vienna, which is considered a very good likeness. Persons who have witnessed exhibitions at the institutions for the blind, have been surprised at the ease and fluency with which they can read books printed in raised letters, by passing the fingers rapidly over them: this, however, is by no means so extraordinary as many other instances which are notorious, though not well understood. A blind man, for instance, when walking in a perfect calm, can ascertain the proximity of objects by the feeling of the atmosphere upon his face; it would seem at first that the echo given back, were it only from his breathing, might be sensible to his ear; but we have ascertained by experiment, that a blind man with his ears stopped, could tell when any large object was close to his face, even when it was approached so slowly as not to cause any sensible current of air.

It is a common supposition that the blind can distinguish colours, but we are convinced that this is impossible; all the blind, whom we have consulted on the subject, have replied that they had no such power, and they did not believe that any blind person ever had it. Indeed what tangible quality can there be in a substance so etherial, that it passes unobstructed through dense glass? There was an instance of a girl in England, who was generally believed to have this power; and the trials and tests which she successfully underwent somewhat puzzled us, until an explanation of the difficulty offered itself in the chemical properties of the different coloured rays of light. She could ascertain the colours of different pieces of cloth by applying them to her lips in succession; and she must have learned that some colours radiate heat more rapidly than others, so that she could tell white from black by the different degree of warmth which it imparted to her lips. This is perhaps one of the most extraordinary instances of nicety of touch which can be quoted. The same girl used to astonish incredulous visitors by reading the large letters of the maker's name, written in their hats, while they held them behind her back.

There is hardly a subject in the whole range of science, which may not be mastered without the aid of the sight; this fact, if it be not deducible from a consideration of the nature of the senses, may be established by numerous instances in history of blind men having raising themselves to eminence in various professions. How little do men in general learn by the sight, that they could not learn without it? How vast and varied is the knowledge of some men, who seldom go beyond the bounds of the city in which they were born, and whose knowledge is obtained from books! But cannot the same knowledge be obtained by hearing books read by another? Nay! does not the mind grasp it more firmly, and hold it more tenaciously? The very facility with which we can glance over a page, and the ease with which we can refer to it, causes us to be negligent and inattentive; the eye often travels listlessly over sentences, while the mind is travelling elsewhere; and sometimes, even when performing two simultaneous operations of reading and repeating aloud, we may be thinking of something else. But the blind man has the greatest inducement to attention; he knows that he cannot refer to the passages he hears, and he therefore arranges and stores them away in his mind with the greatest order, and can refer to them with ease. The knowledge which we obtain from books, however, will not be long beyond the reach of the blind man, since ingenuity is fast bringing to perfection a system of printing for his use, of which we shall speak by and by; but even if it were so, there is a still more vast and valuable mine of knowledge which is to be explored by conversation and intercourse with the world; and to this the blind man

has free access: there are a great many shrewd and intelligent men in the world who are as blind to books, as he is, and who can hardly sign their names.

How did Malte Brun acquire his knowledge of the geography of the countries about which he wrote so fully and so well,—was it by visiting them? No! it was by a process of study which he might have followed as thoroughly, though not quite so easily, had he been deprived of sight. How do we learn the geography, the history, the language, the manners and customs of different countries which we never saw,—is it not by means which are perfectly within the reach of a blind man, provided the necessary pains are taken with him? In mathematics, do we not close our eyes, the more completely to shut out external impressions, and the more intensely to bend our faculties to the contemplation of the question? And in every mathematical calculation whatever, has not the blind man an immense advantage over us, provided he be furnished with the means of putting down his results in a manner to be read by himself? Now we shall see that such means are provided for him, and that he can go through arithmetical and algebraical calculations with greater ease than seeing persons. All kinds of problems may also be solved by the blind, since tangible diagrams can be prepared for them.

The languages, the classics, the long range of history, the wide field of letters, are all open to the blind man: we see no obstacle at all in the way of his becoming an able counsellor at law, or occupying the pulpit with ability and advantage. As for music, and her sister poetry, it would be an idle waste of words to try to prove that the blind can become their successful votaries,—for there stand a long array of sightless bards, headed by the "blind old man of Scio's rocky isle," whose verse has charmed every age, and been repeated in every tongue. In music, the names of Stanley, Gautier and Chauvain are already conspicuous.

But, after all, the best argument in favour of the capacity of the blind for receiving a high degree of education is to be found in the number of those who have raised themselves to eminence. Ancient history abounds with them; the names of Didymus of Alexandria, Eusebius and Aufidius are well known; and Diodotus, the master of Cicero, who lost his sight, still pursued his studies with great success. Achmed Ben Soliman, one of the most beautiful Arabian writers and poets, was blind from his infancy. But we need not go back to distant ages to find examples of men who have raised themselves to eminence, in spite of the obstacles which nature has placed in their way. Sanderson, the professor of mathematics, lost his sight in infancy. He published a volume called the Elements of Algebra, an extraordinary work, filled with singular demonstrations which a seeing person would not perhaps have hit upon. But the most wonderful of Sanderson's performances were his dissertations upon optics, light and colours, with which he used to delight and astonish his audience. The Rev. Dr Blacklock, too, gave extraordinary proofs of the power and correctness of the imagination, for though he never saw the light, he has left us some most beautiful delineations of nature, in the volumes of poems which he published: as in his Wish,

> On rising ground the prospect to command,
> Untinged with smoke, where vernal breezes blow,
> In rural neatness let my cottage stand;
> Here wave a wood, and there a river flow.
> Oft from the neighbouring hills and pastures near
> Let sheep with tender bleat salute my ear, &c.

And again,—

> Let long lived pansies here their scents bestow,
> The violet languish and the roses glow;
> In yellow glory let the crocus shine,
> Narcissus here his love-sick head recline;
> Here hyacinths in purple sweetness rise,
> And tulips, tinged with beauty's fairest dyes.

Contemporary with Blacklock was Dr Henry Moyes, the eloquent professor of philosophical chemistry in Manchester. Though he lost his sight in early infancy, he made rapid progress in different sciences; he acquired not only the fundamental principles of physics, music, and languages, but he plunged deeply into the most abstract sciences, and displayed a minute knowledge of geometry, of optics, of algebra, of astronomy, of chemistry, and in a word, of most of the branches of the Newtonian philosophy. Every time he entered into society, he first passed some minutes in silence: the sound enabled him to judge of the dimensions of the apartment, and the different voices of the number of persons present. His calculations in this respect were very exact, and his memory was so faithful that he was seldom mistaken. He has been known to recognise a person the instant he heard him speak, although more than two years had elapsed since they had met. He could ascertain with precision the stature of persons by the direction of their voices; and he made tolerable hits at their character and disposition by the tone of their conversation.

The instances now quoted are but a small portion of those which may be adduced in favour of the facility of giving to the blind an education. These were men who were endowed with genius; but great as were their powers, their minds would have been left in darkness as total as their bodies, had they not been fortunate enough to possess friends of a philosophic turn of mind, whose affections prompted them to great efforts to overcome the obstacle of blindness. The zeal of the subjects more than requited them.

One example may be adduced of astonishing powers of another kind, in a blind man, who was entirely neglected in his youth: it is that of John Metcalf, about whom ample evidence and information may be obtained from the transactions of the Philosophical Society of Manchester, and from the Memoir of Mr Bew. Metcalf was a native of Derbyshire, and he early became so well acquainted with the roads, that he took up the trade of a teamster, driving his cart from one place to another. During very dark nights, he used to act as guide to those who had eyes, but could not see: in this, however, he was not entirely singular, for there is a well known instance of a blind guide in Switzerland. But Metcalf gradually rose in the world, and having acquired a most exact knowledge of the situation, size and shape of every hill, rock, and tree about the peak, he undertook to correct the direction of the routes; and having, by the help of a compass, laid out several plans, which were adopted,—he took up the business of a surveyor. Mr Bew says, he is now occupied in projecting and laying out roads in mountainous and almost inaccessible districts. I have often met him with a long pole in his hand, crossing roads, clambering precipices, descending into valleys, and feeling out their different dimensions, their forms and situations, so as to be able to make out his designs most correctly. He makes his plans, and estimates by a

peculiar process which he cannot communicate; nevertheless, his talent is so decided, that he constantly finds occupation. Most of the routes on the Peaks of Derhyshire have been changed in consequence of his suggestions, principally those in the neighhourhood of Buxton.

The hlind have been considered in all ages as of necessity cut off from participation in the business and pleasures of life; they bave been made the *parias* of society,—and althougb the hand of charity has ever been open to their cry,—yet men have shrunk from an attentive examination of their situation. They have often been accused of a disposition to atheism,—but we think without sufficient reason: surely the increased sense of dependence must be conducive to a feeling of reverential awe for a Power, about whom the imagination is ever busy. That many eminent hlind men have been atheists, is certain; but it is certain too, that their scepticism arose in a great measure from the improper light in which they bave been regarded. The dying Sanderson said to his clergyman, "you talk to me of the wonders of creation, hut how often have I heard you express your wonder at my performing things which are to me perfectly simple; how then do I know that your wonder is more reasonable in the one case, than in the other?" With regard to what are called feelings of modesty,—the hlind possess them in a very high degree, the speculations of Diderot and others to the contrary notwithstanding; they are from their situation led to be particularly scrupulous in their regard to *les convenances* of society. They are exceeding orderly as well in the arrangement of their ideas as of their property; hence, perhaps, their horror of theft, and their respect for the property of others. The method of classification which they adopt, enables them to hring the memory to a very bigh degree of perfection; hence the astonishing instances which we have of blind men retaining several thousand words, without meaning, and without connection. It is related of Dr Moyes, that he would recognise by their voice, persons with whom he had had but a slight acquaintance, and whom be had not met for more than a year.

The want of sight makes tbe blind insensible to the infinite variety of beauteous aspects which nature puts on, wben she comes forth blushing with the hues of morn, or arrays herself in the silver mantle of moonlight, or decks herself out in the gorgeous robes of sunset. If, tben, all the grandeur and glory of nature are lost upon them, how much more insensible must they be to the ridiculous display of human pomp and pride; and how much ought this circumstance to influence our treatment of them! The necessity of this may be understood from the anecdote related hy Diderot of the young blind man who was brought to trial for having thrown a stone, which struck another person in the head, and foi various misdemeanors. "He appeared before the judge as before his equal; nor could any threats intimidate him. 'What can you do to me,' cried he to M. Herault?—'I will cast you into a dungeon,' answered the magistrate. —'What then?' returned the blind man,—'I have been living in one all my life time.' What an answer! What a text for a man wbo loves to moralize! We take our leave of the world as of an enchanting spectacle; the blind man goes out of it as from a dungeon; if we have more to enjoy in living than he bas, at least he has less to regret in dying." But Diderot here displays more ingenuity than observation: the blind do not die witb less regret than we do; the love of life is not lessened by the want of one sense, any more than it is in the case of the poor by the want of wealth; many blind men possess high moral courage; some display a degree of independence of character, which at times degenerates into ohstinacy, and excessive egotism; but they are seldom possessed of mucb physical courage.

Nor is the world to them a less enchanting scene than it is to us,—provided they have occupation. Blindness is not the sole, nor the principal cause of the unhappiness of the blind; and, were they not continually reminded of their inferiority hy our officious and unnecessary expressions of sympathy and compassion, they would not feel it. They cannot conceive how the sense of sight can he the source of any positive pleasure to us, otherwise than as it enables us to ascertain the physical qualities of objects at a greater distance than they can hy the feeling. Hence they look upon the want of it as a loss of advantage, and not of enjoyment. There is a great deal of philosophy and of good sense in the answer of a blind man to the question, Whether the possession of sight would not increase his happiness? "I cannot conceive that it would," said he, "in a very material degree. I suppose your eyes serve with you the same purpose that my hands and cane do witb me; that is, to ascertain the shape and other pbysical qualities of bodies. The only advantage you have, is the ability to do this at a greater distance than I can; now if I were to choose, it would be rather to have my arms so constituted that I could reach any object which you can see, than to possess what you call vision.' Hence it is that we seldom find those who are born blind repining after sight; but we do see them sitting bowed down under a sense of humiliating dependence; with their faculties undeveloped by action, and their minds gradually degenerating into imbecility, from tbe monotonous torpor of their existence.

As a general rule, blindness is more prevalent within the torrid zone, less in the temperate, and again increases towards the pole: in dry and sandy soils it is more prevalent than in moist ones. Egypt is the country of the blind *par excellence;* different writers have estimated the proportion of the blind tbere very differently; some say, that one man in every hundred is totally or partially blind; others one in three hundred. The latter calculation is probably the nearest to the truth; but from our observation of the number of men with but one eye, or with distorted eyes in the Egyptian army, we are inclined to think that the number of the blind in Egypt must be fearfully great. The cause is probably the fine sandy dust with which the air is continually filled in Egypt; and which exists to such a degree, that the first cotton machinery sent out from England for the Pacha Mehemet Ali, was rendered useless by it in a very short time. This difficulty is the greatest which his engineers have had to overcome. In several countries of Europe, the census gives accurately the number of the blind.

In Belgium, in 1835, out of a population of 4,154,922, there were 4117 blind, being one in 1009. In Prussia, in 1834, out of a population of 13,509,927, there were 9575 blind, heing one in 1410. In this country, we have no regular statistics on the subject, but taking Prussia as the ratio we may conclude that out of the twenty-five mil-

lion which go to constitute the population of the United Kingdom, 18,000 are blind.

Institutions for educating and otherwise improving the condition of the blind, were first known in France. The earliest idea of such an establishment was conceived by Valentin Haüy, brother of Haüy the celebrated French mineralogist; it was suggested to him by his acquaintance with a blind German lady, the Baroness von Paradis, of Vienna, who visited Paris in the year 1780, and performed on the organ with general applause. Haüy repeatedly visited this ingenious lady, and was much surprised to find in her apartments several contrivances for the instruction of the blind; for instance, embroidered maps and a pocket printing apparatus, by means of which she corresponded with von Kempelen, in Vienna, the ingenious inventor of the chess-player and speaking automaton, and with a learned blind gentleman, named Weissenburg, at Manheim. The philanthropic Haüy compared the high cultivation of these two Germans with the degraded state of the blind in France, where at the annual fair of St Ovide, an innkeeper had collected ten poor blind persons, attired in a ridiculous manner, and decorated with asses' ears, peacocks' tails, and spectacles without glasses, to perform a burlesque concert. Haüy now turned his attention to the condition of the unfortunate blind, with a view to its improvement. He examined the character of an hospital for the reception of the blind in Paris, but found little in it to admire. This establishment, called the "Hospital Royale des Quinze-Vingts," or the hospital of the fifteen score, was instituted in 1260, by one of the kings of France after his crusade to Egypt, during which so many soldiers became blind by the ophthalmia prevailing in that country. From the early period of 1280 till 1780, this institution had continued to afford a refuge to never less than three hundred families of indigent blind persons from all parts of France. At the revolution, some of its endowments were seized, and the institution threatened with ruin, but it was afterwards re-established and still exists, on a somewhat improved plan. Besides supporting the inmates of the hospital, two hundred out-door pensioners are each allowed one hundred and fifty francs, or £6. 5s. annually. When scrutinised by Haüy, this large establishment did not exhibit any system worthy of imitation. It was little else than a charity work-house for the blind, and formed, on the whole, a spectacle of dullness and moral degradation. In 1784, Haüy opened a new asylum, under the patronage of the *Société Philanthropique*, and since called the "Institution Royale des Jeunes Aveugles," or the Royal institution for the Juvenile Blind, in which he set on foot that excellent course of instruction which has since been copied in all quarters of the world. The young inmates were instructed not only in appropriate mechanical employments, as spinning, knitting, making ropes or fringes, and working in pasteboard, but also in music, reading, writing, arithmetic, geography, and the sciences. For this purpose he invented particular means of instruction, resembling those with which he had become acquainted by his intercourse with the two blind Germans. For instruction in reading, he procured raised letters of metal, from which, also, impressions might be taken on paper, the impressions being so deeply sunk in the paper as to leave their marks in strong relief, and which marks were felt by the fingers of the pupils. For writing, he used particular writing-cases, in which a frame, with wires to separate the lines, could be fastened upon the paper. For ciphering, there were movable figures of metal and ciphering boards, in which the figures could be fixed. For teaching geography, maps were prepared, upon which mountains, rivers, cities, and the borders of counties, were embroidered in various ways. In the beginning, the Philanthropic society paid the expenses of the institution, which was afterwards taken under the protection of the state.

The example thus set by France was followed by Great Britain. In 1790, an institution for the blind was established at Liverpool; a second was commenced at Edinburgh in 1792–3; one at London in 1800; and soon after, various other cities were benefited by similar establishments.

The Glasgow Asylum was begun as late as 1828, by an endowment of £5000 by a benevolent individual, (John Leitch, Esq.) It is for both young and old, like that at Edinburgh, and gives a useful education to a class of beings who would otherwise be left without methodic instruction. It has gone on, increasing in numbers and prosperity, ever since its commencement, as the following table (extracted from the *Report for* 1839) will show:—

*Number of blind persons in the asylum, Glasgow, since its establishment; specifying the number each year, and the proceeds for work:*

| Date. | Number from 9 years and under 14. | Number above 14 years. | Amount of Sales. | | |
|---|---|---|---|---|---|
| 1828 | 8 | 14 | £231 | 2 | 5 |
| 1829 | 10 | 18 | 642 | 14 | 0 |
| 1830 | 12 | 22 | 665 | 16 | 11 |
| 1831 | 14 | 28 | 887 | 11 | 5 |
| 1832 | 14 | 28 | 1101 | 9 | 7 |
| 1833 | 16 | 29 | 1189 | 17 | 6 |
| 1834 | 18 | 30 | 1303 | 0 | 1 |
| 1835 | 20 | 35 | 1953 | 16 | 3 |
| 1836 | 23 | 37 | 2514 | 15 | 2 |
| 1837 | 25 | 39 | 2472 | 1 | 0 |
| 1838 | 28 | 42 | 2848 | 11 | 3 |

The male adults are employed in the weaving of sacking-cloth, making baskets of various sizes, spinning twine, making and repairing mattresses, making door-mats, hearth-rugs, door and table rugs, with fringed rugs for parlour doors. The boys are employed in working nets for wall trees, sewing sacks, and such work as they are found capable of doing till their education is finished, and they have acquired strength sufficient to be put to regular trades in the asylum. The female adults are employed in sewing, knitting, netting, spinning and winding of pirns for the weavers. The girls assist in the household work, and in addition to their general education, they are instructed in knitting silk purses, stockings, and caps.

The wages are regulated in these departments by the amount of work performed. They are allowed the same rate that other workmen have for the same kinds of work. It being ascertained that a man can make seven or eight shillings per week, he receives that as his weekly wages. At the end of every four weeks, a statement of his earnings is made up from the work-hook, and whatever he has earned over that sum is paid him; and, as a reward to industry, he receives one shilling per week of premium: but, if the weekly amount he not kept up, or the work be badly done, there is no premium allowed.

Ever since this regulation has been adopted, a marked improvement has taken place, both in the

quantity and quality of the work produced. At the monthly settlement, the over-earnings which some of them have had to receive, have amounted to six, ten, and even twelve shillings. It is the practice also in this institution, that as soon as a person has acquired a proficiency in one trade, he is instructed in another; so that, if there be over stock from the one occupation, he can betake himself to the other. It is, therefore, not uncommon that the same person is at different times employed in two or three departments.

The over-earnings, with the premiums paid in 1838, amount to £131. 1s. 3d. The delight exhibited by the blind workmen and families, when they return with the fruits of their labour, may be easily conceived. A spirit of industry is not only excited and kept up, (very different indeed from their former habits,) but an opportunity afforded of enjoying all those blessings resulting from the endearing relations of home, which they never could enjoy, were they (as is the case in some institutions) maintained within the establishment.

On the 19th December, 1836, the treasurer gave into the funds of the institution, from the sale of the Statements of Education of the Blind, £40, together with all the books remaining on hand, with a request, that as there was no provision for the blind by the charter, when any of them were unwell, that the directors would allow a sum annually for that purpose. In consequence of this, it was recommended to the general meeting, that the sum of ten pounds annually, should be given, agreeable to his request; which was confirmed.

Thereafter a society was formed, with regulations for their government:—all blind inmates receiving wages, pay into the fund every four weeks, on the day that the over-earnings is paid, each male, 6d., and each female, 3d. When confined to bed and unable to work, each male receives 6s. per week, and each female, 4s. If confined for three months, the aliment is reduced; the male to 4s., and the female to 3s. On the death of any member or their wives, the sum of £3 is allowed to the survivor, for funeral charges; and if a child, £1. As yet, the funds have been sufficient for all demands; but if at any time there should be a deficiency, the participators are so convinced of the advantages of the society, that if it should at any time fall short, they cheerfully agreed to add to their monthly contributions.

The educational department of the institution is conducted with great spirit and success. The branches taught are arithmetic, geography, and the elements of astronomy, and geometry. The addition of a knowledge of music to the qualifications of the blind is also industriously cultivated; and since the invention and introduction of the embossed system of printing with Roman letters by John Alston, Esq., of Rosemount, honorary treasurer of this institution, a broad basis has been laid, which promises to render the education of the blind as perfect, and as extensive, as that of the seeing. On that system have been already printed several elementary books, the whole New Testament, with the Scotch Metrical Version of the Psalms and Paraphrases, the English Liturgy, an English Grammar, a musical Catechism, Æsop's fables with cuts, &c. &c., and these have found an extensive circulation, both in this country and in America. It may also be stated that arrangements have been entered upon, by which the whole Bible shall be printed at this institution. The book of Genesis is already finished, and the work is going on with rapidity.

The mode of instruction adopted is the following:—After the pupils have acquired a knowledge of the shape of each letter of the alphabet, they are taught orthography; they next proceed to the study of etymology; the derivation of words and their relation to each other, are particularly explained. After they have attained this, words of two and three letters may be submitted to their touch. They should then be made to feel the words with two or three of their fingers, placing a finger on each of the letters; by this means they will be able to decipher two or three letters at once, which by practice will give a dexterity and fluency to their reading; their finger nails to be kept short to prevent them from injuring the surface of the letters. By this system of tuition, the memory and the understanding, as well as the sense of touch, become the channels through which instruction is conveyed.

At present there are in the Glasgow Asylum above thirty individuals, whose ages vary from ten to thirty-two years, who can read, and the attainments of some of them would bear a comparison with those that see of the same age and time under tuition. On the sabbath days, when they are prevented from attending church by unfavourable weather, they read their New Testaments and other books now provided for them, the same as the seeing; and in the evenings, instead of being congregated together, and instructed orally by their teacher, as was the practice before the introduction of this system of printing, each pupil has his book and lesson assigned him, and the whole retire to their apartments, and peruse the lessons. At the hour fixed, they assemble in the school-room or chapel, and repeat what they have learned. To the seeing, nothing can be more delightful than to contrast the advantages they now possess, and their former situation.

The following Table, showing the total number of blind persons admitted into the Glasgow Asylum for the Blind since the commencement, together with the causes of their blindness, so far as is known, has been got up with great accuracy, and will be useful to many:—

| | |
|---|---|
| Blind from their birth, | 19 |
| In consequence of inflammation, | 31 |
| — — Scarlet Fever, | 1 |
| — — Small Pox, | 20 |
| — — Typhus Fever, | 1 |
| — — Nervous Fever, | 1 |
| — — Opacity of the Cornea, | 1 |
| — — Vitriol thrown on the Eyes, | 1 |
| — — Amaurosis, | 7 |
| — — Cataract, | 4 |
| — — Cataract, also Deaf and Dumb, | 1 |
| — — Accident, | 11 |
| — — Vomiting of blood, | 1 |
| — — Measles, | 1 |
| From causes not known, | 15 |
| | 115 |

The following are the institutions for the blind in this country, with the numbers each contained, according to their last reports:—

| | |
|---|---|
| London Institution contains | 122 |
| Liverpool — | 108 |
| Edinburgh — | 80 |
| Glasgow — | 70 |
| Bristol — | 50 |
| Norwich — | 50 |
| Dublin, Richmond | 39 |
| Do., Molyneaux | 30 |
| York — | 30 |
| Belfast — | 11 |
| Limerick, no return. | |
| Manchester not yet opened. | |
| Newcastle — | 10 |
| | 600 |

Thus, in a blind population of nearly 18,000, there is only 600—at most, not 700—in all the institutions in this country, where any provision is made for their instruction in mechanical arts, and for their moral and intellectual training. Before the introduction of the mode of printing in the Roman letters in relief, in January, 1837, there were only very few who knew letters, and the greatest portion of these were in the Glasgow institution. Fortunately this is no longer the case; for in London, Edinburgh, Bristol, Norwich, York and Newcastle, there are many who will bear a comparison in their attainments with persons of the same age, who have all their faculties.

It is earnestly to be hoped that the success which has attended the introduction of this system of reading into some of these institutions will induce others to adopt the same; so that, all acting upon the same mode of printing and teaching, it may be the more effectual for the general benefit of the blind, and may carry into practical operation what is aimed at, their moral and religious interest.

BLIZARD, Sir William, surgeon and vice-president of the London hospital, F. R. S. L. and E., F. A. S., &c. was born at the village of Barnes Elms, in Surrey, in the year 1743; being the youngest but one of five children of William Blizard, an auctioneer. His early education was neglected; so that he had not the advantage of good classical instruction; but, in after years, and without assistance from others, he acquired tolerable facility in reading Latin. He was articled to a Mr Besley, surgeon and apothecary at Mortlake; and while with him devoted much attention to the study of botany. Sir William commenced his professional studies in the metropolis at the London hospital. At an early period of his life he was elected surgeon to the Magdalen, a situation which he retained until the year 1780, when he was appointed surgeon to the London hospital. It is to his benevolent and active efforts that the London hospital owes, in a great measure, its present state of prosperity, and its enlarged capability of usefulness. In the year 1787, Sir William was appointed professor in anatomy to the old corporation of surgeons; and in 1788 he was unanimously re-elected. In a few years afterwards he became an examiner. He also rendered considerable assistance in obtaining a charter for the new royal college, in the proceedings of which he took a great interest to the close of his life. In 1811, the court of assistants voted him their grateful thanks "for the extraordinary services he had rendered to the college as one of the auditors," and "for the benefits derived to the college from the great zeal and eminent talents displayed by him in its multifarious departments." On his decease, the court of assistants also agreed to resolutions expressive of their deep respect for his memory. In 1803, on the occasion of presenting an address to the king from the college of surgeons, Sir William received the honour of knighthood. Sir William was partly the founder, and continued for many years chairman, of the anatomical society. Among other works, he published "An account of a new method of treating Fistula Lachrymalis," in the Philosophical Transactions, vol. lxx. p. 239; "Experiments and Observations on the external use of Tartar Emetic," in the London Medical Journal, 1789; "Observations on the use of Electricity in Deafness," in the same Journal for 1790; "Suggestions for the Improvements of Hospitals and other Charitable Institutions," 8vo, 1796; a book of considerable merit, which was translated into the German language by Dr J. A. Albers; "A Lecture to the Scholars at the Maritime School at Chelsea (of which institution he held the office of surgeon), on the Situation of the Large Blood-Vessels of the Extremities, explaining the use of the Tourniquet, to which is appended a brief explanation of the Nature of Wounds," 12mo, 1798; "A Paper on some Epidemic Effects," in the medical facts and observations, 1772; "Hunterian Orations," delivered in 1815, 1823, and 1828; his "Oration, the first delivered before the Hunterian Society, with Supplementary Observations and Engravings." In 1785, he published "Desultory Reflections on Police; with an Essay on the Means of preventing Crimes, and amending Criminals." Sir William was elected Fellow of the Antiquarian society in 1779; and Fellow of the Royal society in 1787. He was Fellow of the Royal society of Edinburgh, and corresponding member of the Royal society of Gottingen. He assisted in establishing the Horticultural society; but, after a few years, retired from it, in consequence of the fashionable *fêtes*, which he considered incompatible with the objects of a scientific body. He was one of the founders of that highly useful and interesting establishment, the London institution; of which, for many years, he was vice-president. In his ninety-third year, he presided at the annual meeting. He was consulting surgeon to the deaf and dumb asylum, the marine society, the clergy orphan asylum, and the London orphan asylum.

In the summer of 1827, Sir William, then eighty-four years of age, paid a visit to Edinburgh, which was the longest journey he ever made from home. He experienced the greatest pleasure from the warm and kind reception which he there met with from several of his old friends and former pupils; particularly from the Bells, Dr Monro, and others who might be named. In 1833, he was invited by a numerous and highly respectable body of individuals, chiefly composed of members of his own profession, in token of their high esteem, to dine with them at the Albion Tavern. But although the energy of an iron constitution had sustained the wear and tear of incessant activity of mind and body up to nearly his ninetieth year, it began now to yield. His sight failed him; and he became nearly blind. Having been informed that he had cataract, he determined on its removal; and the lens in the right eye was skilfully extracted, by Mr Lawrence. Sir William bore the operation, and the subsequent confinement, with great composure and patience. Nothing could be more gratifying than the result. He found himself able to recognise his friends, and to write as well as ever; and he afterwards appeared in improved health and spirits. He died on the 28th August, 1835. A life of him has been published by William Cooke, Esq.

BOBBIN-NET. The manufacture of bobbinnet, as a substitute for thread and silk lace, is extensively carried on in Nottingham and its neighbourhood, and is also followed to a considerable extent in the counties of Devon, Somerset, and Norfolk. The annual consumption of raw cotton for this manufacture is stated to be about 2,400,000 lbs. weight, and the fixed capital embarked in it little short of two millions. Within the last fifteen years, the manufacture has extended to the continent, Calais being the principal seat of it there, but France is indebted for its fine yarns to Eng-

land, which it receives on payment of a duty of about 2s. 10d. a lb.

The manufacture of bobbin-net dates from only about the middle of the last century. The stocking-frame suggested the invention. It was discovered, it is said, by mere accident, that by applying to the stocking-frame another machine as an appendage, and which was called the "tickler machine," the stocking-loops could be removed in certain and various directions, so that the work assumed somewhat the appearance of lace. The net thus produced was, however, deficient in this essential point, that, when unstiffened, it no longer retained the appearance of lace. Notwithstanding this defect, upwards of 20,000 persons were at one time employed in making this net and in ornamenting it with embroidery. This partial success appears to have acted as a stimulus, and, about the year 1770, many attempts were made to contrive machinery that should more closely imitate the lace made by hand, by twisting and traversing the threads round each other. A machine was at this time brought from Switzerland, and various attempts were made to improve it so as to produce a sort of plat; but this was found to be a slow and imperfect process, and was soon abandoned. Numerous attempts were then made to produce a more perfect mechanism. Winding bobbins with teeth and rolling in other rock-teeth,—threads wound upon wire,—tier upon tier of hooks,—revolving wheels on slides,—and hundreds of other plans, were attempted. By some of these the bobbin-mesh was indeed produced, yet the slowness of the operation, and still more the want of accuracy in the working, prevented the adoption of any one of those inventions. In this state of things, a workman of Nottingham, employed in making machinery for producing fishing-nets, seized upon a hint furnished by a child at play, and discovered by that means a mode of forming the bobbin and carriage now used in the bobbin-net machine. The invention was applied in the first instance to the production of fishing-nets, and many abortive attempts were made before the principle thus discovered could be applied to the manufacture of bobbin-net lace. It was not until the year 1809 that the first successful machine for this purpose was perfected. The first bobbin-net machine was extremely complicated in its contrivance, and for this reason slow in its operation. It had twenty-four motions to the series for twisting the mesh, and four other motions were required to secure the twist from unravelling. The right to this invention was secured by patent, and proved to be a most successful speculation to those who embarked in it. Before the fourteen years for which the patent was granted had expired, the machine had been so far simplified as to require only thirteen instead of twenty-four motions for completing the mesh, and only two instead of the four motions that had been necessary to secure the twist; and since the invention has become the property of the public by the expiring of the patent, so much ingenuity has been brought to bear upon the construction of the machine, that only six motions are now needed for the production of the mesh, and the two motions then needed for securing the work are now performed simultaneously with the other six. By these means the speed of the machines has been increased twelve-fold, and, in consequence of the greater simplicity of the working, it has been found practicable to propel them by steam and water power. The net produced in the original machines was necessarily limited in its width to one yard and a half, but many frames are now in use which make net four yards wide. It has also been found possible, by the aid of machinery, to work various ornaments into the net, and means have also been discovered for working the net into slips of various widths,—the original machine having been capable of producing only one plain broad piece. The simplification of the machinery has of course occasioned a reduction in the cost of producing the manufacture; but the profits of the possessors of the patent must, notwithstanding, have been ample, since they were enabled to take advantage of the desire of the public to purchase their fabric to such a degree as to sell for five guineas that which may now be purchased for half-a-crown.

BODMIN; a market-town in the county of Cornwall, 225 miles from London. It is situated near the centre of the county, in a hollow between two hills. Races and assemblies are occasionally held here. Bone lace was formerly made here in considerable quantity, but the chief manufacture at present is that of shoes, which are sold in great numbers at the markets and fairs. Woollen cloth and yarn are made, but to no great extent. Saturday is market-day. Population, in 1841, 5901.

BONE (*a.*) Bones have of late years risen into high consideration, on account of the valuable properties which have been discovered to belong to them, for the purposes both of agriculture and chemistry. When crushed in a mill, the powder is found to be of the most fertilizing character as a manure, and from its portability can be applied to elevations and steeps to which heavier manures cannot be carried. "Steeps (says Mr M'Diarmid of Dumfries) which for centuries grew nothing but grass, and grass too of inferior quality, are now covered in regular rotation with turnips, oats, barley, and even wheat, and, allowing for some difference of climate (the effect of which is felt more or less in backward seasons), are all but undistinguishable from the plains below. Up till 1828 or the following year, thirty-two bushels of crushed bones were considered equal to twenty cubical yards of stable dung, and each respectively the requisite manure for an acre of ground—a difference in portability which may be expressed by one to thirty, without the slightest exaggeration. If one cubical yard of thoroughly made manure be considered a sufficient load for a horse and cart, twenty such conveyances would be required to transport from town to country the quantity named; and supposing it fairly deposited on the farm, the grand question is, how many horses will find it hard enough work to convey the load up hill. Thirty we should consider a moderate number, and when to these we add the labour of two scatterers to each cart, the expense of tolls, extra feeding, and other items, the reader will at once perceive the total impossibility of manuring, on the olden principle, mountain land. The expense, in fact, was so enormous, that the thing was rarely if ever attempted; while with bones the case is so different, that the horse and cart and man that bring the article from the mill can take it to the place of its destination; and when there, go over an acre of land with greater ease than sixty persons could do with ordinary dung. Nor is this all; for although thirty-two or thirty-four bushels of bones per acre were very generally used at first, experience has shown that so large a quantity is not at all necessary. Land is always

grateful for favours conferred, and never forgets the first benefit; and hence the discovery, that from twenty to twenty-five bushels stimulate just as well as the original quantity. Such, in fact, is now the general practice, and it is further considered a good plan to deposit in drills or furrows common manure first, and then spread a sprinkling of bones on the top. In this way there is action and reaction, and the fermentation natural to the one article affects the other favourably, by bringing its latent virtues sooner into play. In some parts of England two quarters per acre, or sixteen bushels, is considered sufficient, and a writer in the Mark Lane Express strongly recommends mixing crushed bones with coal ashes passed through a riddle, that the finer parts may be taken, and the rougher rejected. From all this, it is plain that extreme portability is the leading virtue of bone manure, and there can be no doubt that it is on the strength of this quality chiefly that so many upland hills and steeps in almost every county in Scotland, previously bare even of blades, have been reclaimed almost from a state of nature to a state of great and growing fertility—vastly to the augmentation of the agricultural wealth and resources of the country."

Bones first came to be used as a manure, around Hull, so far back as thirty or thirty-five years ago, but their use did not spread into Scotland till about 1825. In Yorkshire and Lincolnshire they are most extensively used.

The *Bone-breaking machine* consists of two rollers grooved and indented, and with pinions on their ends, by which they may be moved either by animals, water, or steam power. The surfaces of the rollers are filled with indentations and strong teeth, which penetrate and break the bones to pieces. This is accomplished by employing separate cast-iron wheels, placed side by side upon an axis, to compose the rollers; the wheels have coarse teeth, similar to those of a saw or ratchet wheel; each wheel of the lower roller is an inch thick, and they are placed at distances of an inch and a half asunder, having circles of hard wood or iron placed between them. The bones which have passed through the rollers slide down an inclined board, and collect at the bottom in a heap. They are then passed through the rollers a second time, which are screwed tighter in order to pulverize them more effectually.

In chemistry, bones in a calcined state are used in the manufactory of ivory black, and in the purification of sugar, &c. In 1811, M. Figuier of Montpellier, discovered that animal charcoal or calcined bones blanched vinegar and wines with much more energy than vegetable charcoal, and in 1812 M. Derosnes proposed to employ it in the purification of syrups and sugar refining, since which it has been extensively used, bone charcoal being found more powerful than wood charcoal for that purpose. The calcination of bones is effected either by heating them in a retort similar to that in which coal is decomposed in the gas-works, or in small pots piled up in a kiln.

BONE, Henry, R. A., an eminent enamel painter, was the son of a cabinet chair-maker, at Truro, in Cornwall, and was born in that town on the 6th of February, 1755. When twelve years old, his parents removed to Plymouth, where, in consequence of his having copied a set of playing cards, which were shown to Mr Cookworthy, then carrying on business as a china manufacturer, who considered that they evinced much talent, he was bound apprentice to that gentleman; and subsequently, on the factory being removed to Bristol, he there completed the term of his apprenticeship in the year 1778. Although the hours of employment in the factory were from six in the morning, until six at night, he found sufficient time to practise drawing, by copying prints, and such other matters of art as fell within his reach, though the purchase of them was a serious consideration, his only income being from a small allowance made to him by his master for superintending the labours of his fellow-apprentices, and from small sums received for working after the regular hours at the factory. In 1779, on the failure of the Bristol establishment, where he had continued to be employed after the expiration of his apprenticeship, he removed to London. The first occupation in which he engaged was that of enamel painting for watch-cases, shirt buttons, brooches, pins, lockets, &c., as well as device painting in hair, as it was termed; and so great was the demand for such articles, that he was almost exclusively employed for Messrs Randle, Jackson, and White, in Paternoster Row, then carrying on a large export trade. The device-painting beginning to fail in its attraction, Mr Bone determined to hazard an effort to carry enamel painting, both in size and power, far beyond the limit to which it had heretofore been confined. Accordingly, his first consideration was to simplify the several colours then in use, and to endeavour to reduce them to as few in number as possible, and to render them, together with the necessary fluxes and enamels, of one uniform consistency as to fusion, expansion, and contraction. This determination, as to the simplification of the colours, arose from the knowledge that, as then practised, enamel painting was fettered by rules established by ignorant practitioners, rendering it necessary that the artist should first mix upon his pallette every tint he intended to use; whereas the opinion of Mr Bone was, that the same principles applied to enamel as to any other species of painting, and that, therefore, the main point to be considered was, how, with the eye of an artist, to combine the simple elementary colours, so as to produce the harmony, richness, and power attained by the most eminent painters in oil of the ancient and modern schools. Entertaining such views of his peculiar calling, it is not to be wondered at, that he at once, having by his ingenuity and perseverance surmounted the obstacles that interposed, sprung into notice, and in no long time attained to eminence. Nor were his studies wholly confined to the chemical and experimental part of his art; he nightly practised himself in drawing from plaster casts, and copied in water colour such pictures and drawings as he could obtain, and from which he thought he could derive advantage.

The first attempt of the artist in enamel portrait was a picture of his wife, a descendant of Philip Vandermeulen, battle painter to William III., and to whom he was married in 1779. This picture, on its exhibition at the royal academy in 1780, attracted much notice from its then unusual size, being about two inches and a half in height, the common size of enamels being seldom more than that of a half-crown piece. Two years after he executed a portrait of himself, which was also exhibited at Somerset House.

Through the introduction of a friend he became acquainted with Dr Walcot, then prominently known as Peter Pindar, by whose advice he wholly

abandoned the practice of device-painting, and adopted that of miniature and enamel. It was by this gentleman's suggestion, also, that he was accustomed annually to pay a visit to his native county, where he was fully employed in painting miniature portraits on ivory, from many of which he received commissions to make copies in enamel on his return to London. When in town he constantly occupied himself in making enamels from pictures by the best living artists, which he usually exhibited at the royal academy. A portrait of Lord Eglinton attracted the notice of the prince of Wales; and his royal highness became the purchaser, accompanying the notification of his intention with a command for the artist to attend at Carlton House, where he was received with the most flattering marks of attention. The prince was for several years the purchaser of the principal pictures painted by Mr Bone, which were not executed by commission; and in 1800 he was appointed enamel painter to his royal highness. His rise in public estimation was now extremely rapid; commissions flowed in upon him for pictures in enamel; so much so, that he found it necessary to give up his annual excursions into Cornwall, and to abandon the practice of painting on ivory. On the 9th of November, 1801, he was elected an Associate of the royal academy, and the same year removed into Berners Street, Oxford Street. He was subsequently appointed enamel painter to their majesties, George III., George IV., and William IV., and to his royal highness the Duke of York. He now executed several copies after pictures by Sir Joshua Reynolds, on a very large scale, particularly "The Death of Dido," "Cymon and Iphigenia," "Venus," "Hope nursing Love," &c. &c.; also full length portraits of George III. and the Queen, after the originals by Sir William Beechey, besides a vast number of smaller works.

During such time as he was not engaged in painting by commission, he occupied himself in the execution of a series of historical portraits of illustrious personages in the reign of Queen Elizabeth, a series of enamels unrivalled in the world. They amount to eighty-five in number, and range in dimension from thirteen inches by eight to five inches by four: are most exquisite in finish and powerful in effect; and contain the resemblances of some of the most illustrious men who have adorned the brightest period of English history. There are two other sets of enamels executed by Mr Bone, but both of them were painted by commission. The first is a series of portraits of the principal persons of the Russell family, from the reign of Henry VII. to the present time, executed for his grace the Duke of Bedford, and placed in the collection at Woburn Abbey: the other is a set of portraits of the royalists, during the civil wars in the reign of Charles I., painted for James Pickering Ord, Esq., of Edge Hill, near Derby. The latter set, however, was not concluded by this artist; but is in course of completion by his eldest son, Henry Pierce Bone, of Percy Street, Bedford Square. The Duke of Bedford for a long period was one of Mr Bone's most munificent patrons and considerate friends. His Grace possesses some of the most exquisite of his works; particularly a recumbent "Venus," after Titian; "Bathsheba," after Poussin; "La Belle Vierge," after Raffaelle, in the collection at Bridgewater House; and "The Assumption of the Virgin," after Murillo.

The unremitting exertion of a long series of years began to be too great for the advancing age of Mr Bone; and his eyesight in some degree failing, he was compelled to give up the practice of his profession. Accordingly he retired from his house in Berners Street, and removed to Clarendon Square, Somers Town, where, after three years' residence, during which his health gradually declined, he was attacked by paralysis, of which he died on the 17th of December, 1834. By his wife, whom he survived several years, he had twelve children, ten of whom he brought up to an age of maturity, and three of whom he placed in expensive professions, the army, the navy, and the bar.

BOOKER, Luke, LL. D., M. R. S. L., vicar of Dudley, was born at Nottingham on the 20th Oct. 1762. In early life the whole energy and vigour of his mind were directed to the attainment of classic and literary knowledge, and, devotedly attached to the doctrine and discipline of the Church of England, he took holy orders in 1785. Struck with his proficiency in acquirement, the bishop of Lichfield and Coventry (Dr Cornwallis) ordained him without a title; but he shortly afterwards became lecturer of the collegiate church of Wolverhampton, from whence he removed to the curacy of Old Swinford, and subsequently he became and continued for many years minister of St Edmund's church in Dudley. In 1806 he was instituted to the rectory of Tedstone de la Mere, Herefordshire, on the presentation of his brother in-law, Richard Blakemore, Esq. On leaving Dudley a valuable piece of plate was given to him by his congregation. He returned to Dudley in 1812, on being presented to the living by William Lord Viscount Dudley and Ward. At Dudley he continued, until within a few weeks of his death, to discharge the duties of his sacred office; and the best and most unequivocal testimony to his worth is to be found in the voluntary respect paid to his memory by those among whom he so long and faithfully ministered. It is a striking fact, and one which proves the high degree of public estimation in which as a preacher he was held, that during his ministry, he preached *one hundred and seventy-three* sermons on public and charitable occasions, and that the collections made on behalf of the objects for which he pleaded amounted to nearly *nine thousand pounds*.

As an author Dr Booker's productions were numerous. The chief are Poems, sacred, &c. 1785, enlarged 1788; the Highlanders, 1787; Sermon at Old Swinford, 1788; Miscellaneous Poems, 1790; Sermon on the memory of Mr George Bradley, 1791; Malvern, a Poem, 1798; Sermons to promote Christian Knowledge, 1793; Fast Sermon and Address on Riots 1793; the Hop Garden, a Poem, 1800; Sermon for Blue Coat Charity; Address to the Dudley Association, 1801; Christian Worship for Work-houses; Select Psalms and Hymns for Churches; Poems inscribed to Lord Dudley and Ward, 1802; Duty of inoculating with the Cow-pox, 1802; Christian Intrepidity, 1803; Tobias, a poem, 1805; Calista, or the Picture of Modern Life, 1806; Address to Parliament on enlarging Churches, 1809; Sermon on the Jubilee, 1809; Temple of Truth, 1810; Address to the Legislature, 1810; Two Assize Sermons, 1816; Euthanasia, the State of Man after Death; Lectures on the Lord's Prayer, 1824; Discourses and Dissertations, 2 vols.; Account of Dudley Castle; Mourner comforted; the Springs of Plynlimmon, a poem; the Mitre Oak; Mandane, a drama; Illus-

trations of the Litany; Tributes to the Dead, Epitaphs for Persons of all ages and circumstances, 1830. Dr Booker died at Bower Ashton, near Bristol, on the 1st Oct. 1835.

BOOK-TRADE (*a.*) In 1836, the taxes affecting books were somewhat diminished: 1st, By the duty on paper having been reduced from threepence per pound to three halfpence; and, 2d, By its having been enacted that *five* only, instead of *eleven*, copies of new works should be furnished, at the expense of authors and publishers, to public libraries. The duty on the importation of foreign books, printed since the year 1801, has been reduced from £5 a cwt. to £2. 10s., with this proviso, that the books be in foreign living languages, a condition inserted to prevent classical grammars, dictionaries, &c., from being supplied from the continent.

BOOMERANG; a missile instrument used by the Australian aborigines. It is of hard wood, about the size of a common reaping-hook, but shaped like the line described by the ridge of a hay-stack: in scientific language, the shape is a parabola. It is about two and a half inches broad, a third of an inch thick, and two feet long, the extremities being rounded. One side is flat; the other is rounded; and it is brought to a bluntish edge. Altogether, the thing resembles the letter A, but with a rounded top, and no stroke across. The Boomerang is taken by one end, with the bulged side downwards, and the convex edge forward, and thrown directly onward, as if to hit some one standing thirty yards in advance. Instead of going directly forward, as might be expected, and there falling to the earth, it slowly ascends in the air, whirling round and round, in a figure which suggests the well-known armorial bearings of the Isle of Man, and describing a curved line of progress, till it reaches a considerable height; when it begins to retrograde and finally it sweeps over the head of the projector, and falls behind him. This surprising motion is produced by the bulged side of the missile. The air, impinging thereon, lifts the instrument in the air, exactly as, by hitting the oblique bars in the wheel of a wind-mill, it forces that wheel to go round. It is one of the ancient instruments of war of the Australian aborigines. They are said to be very dexterous in hitting birds with it.

BOOTHROYD, Benjamin, D.D., pastor of the Independent Church at Highfield Chapel, Huddersfield; an eminent Hebrew scholar, who died Sept. 8, 1836; aged 68. He had been forty-two years in the ministry, twenty-four of which were passed at Pontefract, and the latter eighteen at Huddersfield. In 1810—1813, he published a quarto edition of the Hebrew Scriptures in quarterly parts; and previously, in 1807, a "History of the ancient Borough of Pontefract," where he was then a printer and bookseller.

BOROLAWSKI, Count; a celebrated Polish dwarf, was born in 1739, and died at his residence, the Bank's Cottage, near Durham, Sept. 5, 1837, at the great age of ninety-eight. His height was short of thirty-six inches, though his person was of complete symmetry. In former years, he travelled on the continent, as well as in Great Britain; but about forty years before his death, he was persuaded by the prebendaries of Durham to take up his residence in the above cottage for life, and they engaged to allow him a handsome income, which was continued till his death. He excelled as a wit and humorist; was acquainted with several languages; and his company was much courted.

BOTTA, Carlo, a distinguished Italian historian, was born in 1766, in the town of San Giorgio, in Piedmont. He studied medicine in the university of Turin, where he obtained his degrees. The first events of the French revolution having excited the minds of many (especially young people) in the countries bordering upon France, Botta partook of the feelings of the times in favour of reform and the improvement of social order. The expression, perhaps inconsiderate, of these sentiments led to his arrest in 1792, but he was released two years after, when he resolved upon emigrating to France. There he was employed in his professional capacity with the French army, styled "of the Alps," which afterwards received the appellation of the army of Italy. In the train of these forces he re-entered his country in 1796, and next year he followed a division sent by Bonaparte to the Ionian islands. There he wrote a description of the island of Corfu, which he published on his return to the continent. In 1799, he was named by General Joubert one of the provisional government of his native country Piedmont. The advance of Suwarrow obliged him to retire once more into France, but after the battle of Marengo he was appointed by Bonaparte to be a member of the executive commission, to which the temporary administration of Piedmont was entrusted; and, after the annexation of that territory to the French empire, he was elected in 1804, to represent the department of the Dora in the legislative corps. Appointed vice-president in 1808, he found his legislative office to be a mere sinecure under a monarch so jealous of his authority, and he employed his forced leisure in completing his History of the North American Revolution, which he published at Paris in 1810. By the restoration of Piedmont to the king of Sardinia, Botta's nominal legislative functions ceased; he was appointed, in March, 1815, rector of the academy of Nancy; but on the second restoration, he lost his situation, and from that time till his death, he lived privately at Paris, without any employment or pension from government. It was then that he gave himself up entirely to his favourite object, of recording, for the use of posterity, the vicissitudes and calamities of his native country, during the five-and-twenty years that elapsed from the French revolution to the first abdication of Napoleon at Fontainebleau, and the consequent capitulation of Mantua in April, 1814.

Botta was not unaware of the difficulties that awaited him in the execution of his task. Having determined to write the undisguised truth, as far as his mental powers and his means of information would allow,—to speak with frank sincerity, not only of princes and ministers, but also of the people, to spare no party, to flatter no friend, and to calumniate no enemy, he communicated his intention to his acquaintances, most of whom observed to him in reply, that "he either would not have the boldness, or would not be able to effect his purpose; and lastly, that supposing the design practicable, he *ought not* to put it into execution." He persisted, however, and having thrown the gauntlet to men of all parties, ultras and liberals, patriots and tramontanists, religionists and freethinkers, he took his chance with the public; the numerous editions of his book, the avidity with which it has been read from one end of Italy to

the other, and the very strictures with which it has been assailed by men of all colours, have served to prove that he hit the truth oftener than was agreeable to the parties interested. He published his work at Paris, comparatively safe from the vexatious censure of the local authorities of his own country, but still exposed to the vindictiveness of individual rancour, of wounded self-love, of duplicity unmasked. The work is entitled, Storia d' Italia dul 1789 al 1814. Paris, 1824, 4 vols. 4to.

Mr Botta divided his history into twenty-seven books or chapters, twenty of which relate to the Italian wars from 1792 to the peace of Lunéville in 1801, and the seven last continue the history of Italy under Bonaparte's rule, from his appointment to the presidency of the Italian Republic, up to his abdication of power in 1814, and the consequent restoration of the old dynasties. During this second period, Italy becomes in some measure a province of France; the historian has no longer to record decisive events; the scene of war was removed far from the Alps; the Italians, silent and submissive, continued to supply men and money to assist in propelling the car of the victor, but their history was in a great measure the history of "the great empire," and this accounts for the comparative brevity of this part of Botta's task. Yet this epoch is far from being destitute of interest; the arts by which the Italian republic was metamorphosed into a kingdom, with the apparent approbation of many grave, learned, and influential men, who had a few years before denounced eternal hostility to kings,—the annexation of Piedmont—of the ancient republic of Genoa, the ally of France, —of Tuscany, of Parma, at last of Rome,—to the French empire; the wars of Naples, Calabria, and Sicily, the exile of all the old sovereign dynasties, the long contests between Napoleon and the See of Rome, upon matters religious and political, which ended in the imprisonment of Pope Pius VII., and lastly, the war of the restoration in Italy, in which Austrian and English, French and Italian troops took a part; all these, and many minor topics of interior policy, give to this second part of Botta's narrative an interest not the less intense, because it attaches itself to details more particularly Italian, and less generally known. Mr Botta's death took place at Paris, in August, 1837.

BOTTIGER, Karl August, Aulic councillor to the king of Saxony, director of studies at the Ritter Akademie at Dresden, and keeper of the royal museums of antique marbles and of Meng's cast, one of the most eminent archæologists of the age, was born in 1760, at Reichenbach, in Saxon Voigtland, studied at Leipzig, and was appointed in 1784, master of the public school at Guben. He was afterwards, for a short time, director of the gymnasium at Bautzen, whence he removed to Weimar, where, through Herder's recommendation, he became in 1791, director of the gymnasium of that town, and consistorial councillor. In 1804, he preferred the offer of a situation made to him by his own sovereign to an appointment at Berlin, and from this period till his death he constantly resided at Dresden, actively engaged in literary pursuits, and in the performance of his official duties. He died on the 17th Nov. 1835. Among his publications may be pointed out particularly— 1. Sabina, or the Toilette of a Roman Lady of Fashion, of which two editions were published; 2. Ideen zur Kunstmythologie; 3. Notes on select Odes of Horace, (which are most erudite and fully deserve to be translated); 4. Ideen zur Geschichte der Mahlerey. But excellent as all these are, they are equalled in interest and value by the great number of his smaller papers and his letters. Bottiger left two sons; one of whom is professor of History at Erlangen, (author of the History of Henrich der Löwe, History of Saxony, History of Germany, &c., all much esteemed publications,) and the other has a place under the Saxon government. Bottiger of late years instructed the learned prince John of Saxony in Greek. His company was much courted by persons of distinction, on account of his brilliant conversational talents. There was no end to his poignant and sprightly remarks and anecdotes, particularly as he was fond of good cheer, which a sound constitution permitted him to enjoy without fear. Not the least remarkable circumstance in the character of this great scholar was his indefatigable application. At five in the morning he was at his desk, and while at college he usually rose at three or four, so that his eye-sight became much impaired. Some ten or fifteen years before his death, he was successfully couched for the cataract, and had in consequence of this operation, the use of his eyes, assisted by good glasses, up to his death. Many of his pupils are now men of eminence, and some in high stations.

BOTTLES. (*a.*) The duty on stone bottles has been repealed. It was imposed in 1812 at 2s. 6d. a cwt., which was increased in 1817 to 5s. It produced only the insignificant sum of about £3,500 a year, which was collected by the excise at great trouble and expense. The duty on glass bottles still continues, and produces about £110,000 a year. Some regulation regarding the *size* of bottles is much wanted, as many liquors are sold by bottle measure, and yet very considerable differences exist as to the quantities they respectively hold.

BRADFORD; a thriving manufacturing town in the west riding of the county of York, distant from London, 196 miles, N.N.W., and from York, thirty-four, S.W. It has risen into importance only in modern times. It owes much to its situation in the very centre of the manufacturing districts, and to the abundance of coal in the vicinity. Ironstone is also plentiful, and there are some very extensive foundries, especially about three miles to the S.E. of the town. The staple commodities of the town are worsted stuffs, broad cloths, cotton goods, and worsted yarn; ivory and horn combs are also made in great quantity. The commercial operations have been greatly facilitated by the cutting of a branch from the Leeds and Liverpool canal, near Shipley, into the very centre of the town. The cotton-manufactures are of recent introduction, but are making rapid progress. Bradford has indeed suffered less from the depression of trade than most other large manufacturing towns. The rapidity with which its population has increased, is one good evidence of its prosperity. In 1801, it was only 6,393; in 1821, it amounted to 13,064; and in 1841, 66,508.

The *parish* of Bradford is fifteen miles in length, and at an average four miles in breadth. It comprises the market-town of the same name, the chapelries of Hawarth, Horton, and Thornton, and the townships of Allerton, North Bierley, Bowling, Clayton, Eccleshill, Heaton, Manningham, Shipley, and Wilsden. Population of the parish in 1831, 76,996; in 1841, 105,257.

BREAD. (*a.*) Among the recent triumphs of

chemistry is that of making bread from *saw-dust*. Although the contemplation of fare thus manufactured is by no means pleasant, yet in the case of a *famine*, the manufacture might prove of infinite service. It is thus explained. All vegetable substances are based on the element, carbon—the matter which remains of a piece of wood, after it has been burnt. In a hundred parts of sugar-candy, wheat starch, arrow-root, gum-arabic, and wood, carbon is respectively in the proportion of 42·85, (or nearly 43), 43·55, 44·4, 42·23, and 42·7. Between starch and sawdust, therefore, there is only the difference of about one and a half parts in a hundred —a mere trifle. When we reflect on what chemistry has already done, we cannot doubt that little pains would be required to discover a process for completely equalising the ingredients, and consequently reducing the dust of wood to the character of flour. Professor Autenreith has already, by maceration, boiling, and subsequently pounding, reduced wood to a powder, from which a palatable bread has been formed; but we may hope that a perfect conversion of the one principle into the other will yet be effected. Such transformations are already familiar to scientific men, and are just among the most useful of the gifts of science, or, we should rather say, contributions to the general well-being. Take the manufacture of paper from useless rags, or of sugar from the same commodity, or of porcelain and glass from stones and clays, and who can say where is the limit to our power of turning to use and productive agency the most apparently worthless and sterile parts of nature? "Who," says Sir J. Herschell, "would have conceived that linen rags were capable of producing more than their own weight of sugar by the simple agency of one of the cheapest and most abundant acids?—that dry bones could be a magazine of nutriment, capable of preservation for years, and ready to yield up their sustenance in the form best adapted for the support of life—that *saw-dust* itself is susceptible of conversion into a substance bearing no remote analogy to bread; and though certainly less palatable than that of flour, yet no way disagreeable, and both wholesome and digestible, as well as highly nutritive?"

BRECKNOCKSHIRE; a county in South Wales, about thirty-five miles in length, and thirty in breadth. The general scenery of the county is distinguished by great sublimity and beauty. The principal mountain is the Vena or Brecknock Beacon, which is reckoned the loftiest in South Wales. The most important of its rivers, next to the Wye, which forms a natural boundary between this county and Radnor, is the Uske, rising from the Black Mountain, and flowing through a fine valley towards the town of Brecon. One of the largest lakes in South Wales is Brecknock-Mere or Llansafeddar, situated about two miles to the east of the town of Brecknock, measuring about two miles across and abounding in otters, pike, tench, perch, and eels. Copper, lead, iron, coal, and limestone in abundance are the most important natural products of this county. The vale of Usk is a sandy loam; the northern part of the county is stiff loam mixed with clay: the vale of Wye is a brown and gravelly loam of good quality. The agricultural produce consists of oats, wheat, rye, barley, turnips, vetch, and potatoes. There is also a considerable exportation of wool, timber, butter, cheese, and cattle of various kinds, to the markets in the neighbouring English counties. The high lands are chiefly used as sheep pastures, and produce a small breed, but of excellent quality. Near the borders of Monmouthshire are large iron-works. woollen cloths and worsted stuffs are also manufactured to a certain extent. The trade has been considerably facilitated by the opening of a canal from Brecknock to Llanelly, thus opening a communication with the sea. It is eighteen miles in length, and nine feet deep, and is navigable for barges of twenty-five tons burden. Population in 1831, 47,763; in 1841, 55,603.

BRECON, BRECKNOCK, called by the Welsh *Aber Hondey*, is the principal and county town of Brecknockshire, and is finely situated at the confluence of the rivers Hondey and Uske, distant from London by Monmouth 168 miles. In the reign of William Rufus, Bernard de Newmarsh built a castle here—of which some traces are yet visible—from which time the town dates its origin. Brecon consists chiefly of three principal streets, which contain many respectable and well-built houses, and the country in the vicinity is picturesque and fertile. Here are a town-hall, county-gaol, and house of correction, and a fine arsenal which usually contains 1500 swords and 15,000 muskets arranged in fanciful forms as in the tower of London. Population in 1841, 5317. This town, it will be remembered by all lovers of the drama, was the birth-place of Mrs Siddons.

BRIDGENORTH; an ancient borough town in the county of Salop, situated on the river Severn, twenty-two miles S.E. from Shrewsbury, and 139 N.W. from London. It is divided by the river into two portions called the Upper and Lower towns. The Upper town stands on the western bank of the river, on the sides and summit of a rugged hill, or rather rock, which rises to the height of 180 feet above the level of the river. The appearance of this division of the town is remarkably picturesque. At the southern extremity of the rock are the remains of the ancient castle, consisting of little more than a square tower. Other conspicuous objects are the great reservoir of water, the old gothic church of St Leonard, and the more modern elegant structure dedicated to St Mary Magdalene. Even the steep acclivity of the rock next the river is covered with houses, the foundations of the one row being higher than the chimneys of the other. These are approached by a winding carriage road, or more directly by flights of steps cut in the rock and rendered safe by iron railings. The upper part of the town is supplied with water raised from the Severn, and forced by machinery into the great reservoir already noticed, from which it is conducted by pipes into the houses. On a part of the ancient moat of the castle, a theatre was erected in 1824. The public library is a handsome brick building, and contains upwards of 4000 volumes. The lower town, which lies on the opposite side of the Severn, is not so extensive, containing only two principal streets, in which are several ancient houses, particularly one called Careball, occupied by prince Rupert in 1642. Upwards of three-fourths of the population are returned as employed in trade and manufactures, the latter being chiefly those of cloth, stockings, and iron tools. Of late, however, the iron-trade has declined; a large carpet manufactory has been established here. The town derives its chief importance, however, from its situation on the Severn, and it is a thriving inland port. Vessels are built here, and a large quantity of goods

imported for inland consumption, while grain and malt are exported largely. Population in 1831, 5065; in 1841, 6198.

BRINKLEY, JOHN, D. D., Lord Bishop of Cloyne, President of the Royal Irish Academy, F. R. S., &c. &c.; a distinguished mathematician, was a native of Woodbridge, Suffolk. He received the early part of his education at the grammar-school in that town, and from thence he removed to Mr Tilney's at Harleston. He graduated at Caius College, Cambridge, B. A. 1788, as senior wrangler, and Senior Smith's prizeman, and afterwards was elected a fellow of that society. He proceeded M. A. 1791, B. and D.D. 1806. Dr Law, Bishop of Elphin, brother of the late Lord Ellenborough, introduced Mr Brinkley to the notice of the board of Trinity College, Dublin; and in 1792 he was appointed Andrew's professor of astronomy. He devoted himself earnestly to the duties of his office, and published for the use of the students an Elementary Treatise on Astronomy, which is generally considered the best introduction to that science in our language. Dr Brinkley's discovery of the parallax of the fixed stars, in 1814, which was for a time controverted by Mr Pond, was the first circumstance that gave him a European reputation; which was afterwards well supported by his valuable communication to the transactions of the Royal Irish Academy. As a professor, he was chiefly remarkable for his zeal in searching out and encouraging rising merit; he was one of the first to appreciate the abilities of his successor, Sir William Hamilton, and he laboured zealously to extend his fame. When George IV. visited Ireland, he was so pleased with his reception in Trinity College, that he resolved to bestow the next vacant bishopric on one of its members. Mr Goulburn (who was at the time looking to the representation of the University of Cambridge) procured, it is said, the appointment for professor Brinkley, who appeared to the Dublin University, though really a graduate of Cambridge. He was consecrated bishop of Cloyne in 1826; and shortly after resigned his professorship. Dr Brinkley, as bishop, promoted many exemplary curates, whose labours had been overlooked by his predecessors, and he separated several parishes from his see, to give the inhabitants the benefit of a resident rector. From the time of his elevation, his health gradually declined, and he was forced to abandon scientific pursuits altogether. He however, left behind him some valuable mathematical manuscripts, which there is reason to believe will be published under the superintendence of Sir William Hamilton. His Lordship, though in a very declining state of health, had undertaken a long and fatiguing journey to be present at a conference of the Irish bishops. He died at the house of his brother in Dublin, Sept. 14, 1833, aged seventy-two.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE; a society established within these few years for the purpose of promoting the personal intercourse of men of science of all countries, the most prominent feature of which is, that a meeting is held annually in some quarter of the empire, where all the members are supposed to congregate, and where a week is taken up in lectures, experiments, discussions, *fetes*, and banquetings.

The first meeting of the association was held at York, in 1831, where 350 men of science attended, and were enrolled as members. At Oxford in 1832, and at Cambridge in 1833, the attendance became progressively more numerous, and, in 1834, when Edinburgh was the place of meeting, the list of attending members amounted to 2200, including a large number of distinguished foreigners from all parts of the world. The meetings held at Dublin and Bristol in the two following years were distinguished by further accessions of scientific men; and at the meeting at Liverpool in 1837, the number of members present exceeded 3000—the roll comprising almost every name of any scientific note in Britain, exclusive of many foreign visitors of distinction. In 1838, the association met at Newcastle upon Tyne.

The association is conducted as follows:—A president, three vice-presidents, a general and several special secretaries, and two treasurers, with the assistance of a council, preside over and regulate the general business of the society; or rather it is their duty to recommend such measures as may seem good to them, for adoption by a general committee, which is designed to be the supreme governing body of the institution, and is composed of all such members of the association as have contributed papers to the transactions of some learned society. For greater facility in hearing communications, and in directing the pursuit of scientific objects, seven divisions, or sections, as they are termed, have been formed for the conduct of the scientific business of the association; the first section, or section A, taking cognizance of Mathematical and physical science; section B, Chemistry and Mineralogy; section C, Geology and Geography; section D, Zoology and Botany; section E, Anatomy and Medicine; section F, Statistics; and section G, Mechanical science.

Each of these sections, at the commencement of the successive sittings of the Association (which last for a week each year), is placed under the presidency of some individual distinguished in the particular walk of science giving name to the division, and who is assisted by a sectional committee and secretaries. During the meeting of the Association, every section sits separately, listens to communications, and discusses questions brought before it under the direction of its committee. Subsequently, at a final general meeting, the various sectional presidents report and comment upon all that has been done in the department under their charge. Each section, also, may direct inquiries to be made into any point of particular interest within the range of its subjects, and, with the consent of the general committee, grants of money are frequently set apart, where necessary, for the conduct of these inquiries, which are commonly entrusted to such members as have shown the greatest qualifications for the task. The results of these investigations are, as might be expected, among the most valuable communications laid before the sections of each succeeding year. At the same time, voluntary communications form by far the greater part of the matters introduced to the notice of the various departments of the association.

Besides the regular sectional sittings of the association at their meetings, there are various occasional sub-sections and lesser committees appointed for examination into any particular subjects, which the larger divisions may think worthy of it. There are also evening sittings of a more mixed and irregular character than those which take place

through the day. Most frequently, these evening assemblies are devoted either to the discussion of questions before the whole association, or to the hearing of single lectures of an interesting order, and sometimes, also, to the exhibition of experiments. These evening meetings are generally attended by great numbers of ladies. Fetes, dejeuners, and banquetings, fill up very agreeably the remaining leisure time of the members and visitors.

Perhaps the most beneficial result of the association is the production of certain valuable reports on the progress of science, which distinguished members of the association have been induced to draw up annually, at the request of their colleagues, or of the section-committees. These reports bring before the association and the world the latest advances and discoveries in interesting branches of science. Besides thus appropriating subjects to individual members, the sections, at the end of each annual meeting, issue general recommendations or instructions to the members at large, to investigate certain points of interest during the intervals of meeting.

BROOKES, Joshua, F. R. S. F. L. S. F. Z. S. an eminent teacher of anatomy, was born on the 24th of November, 1761. He was one of a numerous family; and, after having obtained an excellent classical education, commenced his professional studies at the early age of sixteen, under the care of Mr Magnus Falconer, and subsequently attended the lectures on anatomy and surgery by Dr Marshall, Mr Hewson, Mr Sheldon, and Dr William Hunter. After attending the practice of the surgeons of the principal hospitals and public institutions in London, he received his diploma as a surgeon. As it was his intention to become a professor of anatomy in the metropolis, he went over to Paris in order to improve himself in the study of practical anatomy, as well as the most important operations in surgery; for this purpose, he was a constant attendant at the Hotel Dieu, and the other Parisian hospitals, then under the superintendence of the most eminent surgeons who existed prior to the first French revolution. His passion for anatomical pursuits was developed at a very early period of his professional career: having witnessed the anatomical museums of Dr Hunter, and those on the continent, he was anxious to form one of a similar nature; and it is well known to the scientific public to what perfection he brought the object of his ambition.

He commenced his career as a professor of anatomy, pathology, and surgery, when about twenty-six years of age; and it is worthy of remark, that the house which contained his museum, theatre, &c., had been previously tenanted by the Hon. Mr Cavendish, the philosopher; and it was in Blenheim Street, Great Marlborough Street, that this gentleman made his important discovery of hydrogen gas. In consequence of his having reduced the fee for a perpetual admittance to his anatomical instructions, from twenty guineas (the usual sum charged by his contemporary professors) to ten, he was looked upon as an innovator on the established rule; which caused his school to be viewed with a jealous feeling; and this was increased, on his determining to deliver a summer course of lectures, justly conceiving, that the science of anatomy could be as well taught in the summer as during the winter season. From the hour of the lecture being seven in the morning, his class was in general composed, at this period, of apprentices and medical assistants, who were, by their avocations, prevented from attending the three-o'clock or afternoon course. Hence Mr Brookes may justly be considered as the founder of the cheap schools of anatomy and medicine, which are now so prevalent in London and the principal provincial towns. As a lecturer, he was extremely minute in his description of the various organs under demonstration; and was considered by some students as rather tedious in consequence. His minuteness was a general proverb throughout the medical profession; and to his credit be it spoken, that he rarely had a student rejected by the court of examiners at the royal college of surgeons, for lack of anatomical information. Sir Astley Cooper has, on more than one occasion, complimented Mr Brookes, by stating that his pupils were by far the best anatomists of any school in London. And Mr Brookes, who frequently examined his pupils prior to their college examination, used to observe, "that, if a pupil passed his last examination, he could stand the test before any court of examiners in the kingdom." In general, a course of anatomical instruction occupies the lecturer seldom more than three months; but, in consequence of the extent to which Mr Brookes followed his descriptions of every part of the human frame, they generally required between five and six months for their delivery. From this cause, his summer course (as already stated), which generally began about the first week in June, at seven in the morning, was seldom concluded until the month of December, and we have known it extend to January; while his winter afternoon course commenced about the first of October, which in London forms the commencement of the *annus medicus:* so that the professor was in the constant habit of delivering two lectures daily for six months in the year. In addition to these, his forenoon labours in the dissecting-room occupied about three hours of his time; during which period, he demonstrated to each pupil the parts he had dissected; and this alone, particularly in the winter season, was any thing but a sinecure; in fact, it was a far more laborious task than the mere delivery of a lecture. Besides which, he injected and prepared the subjects for dissection. The preservation and preparation of the specimens of his museum likewise occupied a great share of his time, as he was almost daily adding to its valuable contents. His museum may be justly ranked as second only to that of the late John Hunter (now in the royal college of surgeons, in London,) in its number of specimens; but the osteological preparations far outnumbered those in the Hunterian collection. In fact, it was the admiration of all who beheld it: it was always open to scientific foreigners, and, on certain days in the year (generally one Saturday in a month), to the public at large; while private gentlemen were frequently granted admission on other occasions. Yet, to the disgrace of the British nation, this admirable monument of his industry was, in his declining years, disposed of and dispersed by the hammer of the auctioneer; and that collection, which had cost him so much labour and anxiety, and upwards of £30,000, was sold for a mere trifle.

In 1826, in consequence of ill health, Mr Brookes was compelled to retire from his duties as a teacher of anatomy. As a teacher, his perseverance, kindness, and zeal for the welfare of his pupils rendered him universally beloved by them; and his acuteness never failed to distinguish those students who

were the most sedulous, as they were constantly rewarded by tokens of his regard and esteem. In 1821, his portrait, painted by Mr Phillips, R. A., was presented by his class, as also, on a subsequent occasion, a piece of plate, as proofs of their affection. In 1823, he addressed a memoir to Sir Astley Cooper, as to the propriety of applying to the Government to permit the importation of dead bodies for dissection from the continent: this document he produced before the select committee of the House of Commons, on being examined relative to the introduction of a bill legalizing dissection. It will be found published in the report of the committee for 1828. During the scarcity of dead bodies, he has been frequently known to give, in the winter season, sixteen guineas for a single subject, charging his pupils but eight, and presenting them with his trouble and expense of preparation and injection. With the exception of Professor Blumenbach, of Gottingen, we are unacquainted with the name of any teacher who, for the long space of forty years, solely devoted his attention to anatomical instruction. In the summer season, he was engaged from five in the morning until a late hour in the evening, during which time his dissecting rooms were open, and himself easy of access, whenever his pupils required his presence.

The last appearance of Mr Brookes as a lecturer was in 1827, when he delivered a very interesting course of lectures at the rooms of the Zoological Society, in Bruton Street, Bond Street, on the anatomy of a magnificent ostrich, which had been the property of George IV., who, on its decease, presented it to the society. His discourses were attended by a crowded and fashionable auditory, and were illustrated, not only by the dissected portions of the bird, but by beautiful prepared specimens from his then existing museum.

On the 25th of June, 1831, Mr Brookes took an affectionate farewell of his former students and friends, at a public dinner to which they had invited him. On this occasion, he boasted, with a becoming pride, the rank which many of his former pupils now held in society, not only in their professional vocations, but for their great success in cultivating the different branches of the collateral sciences. He suddenly expired, on the 10th day of January, 1833, at his residence in Great Portland Street, aged seventy-two years.

BROUGHAM; a parish in the county of Westmoreland, with a population of 249. There was formerly a village of the same name, but it is extinct. The name is said to be derived from the Saxon words *Burg-ham* signifying *castle-town*, this having been the site of the Roman station *Brovoniacum*. Here are the remains of an ancient castle. In the vicinity, on a wooded eminence on the east side of the Lowther, stands Brougham-hall, the seat of Lord Brougham and Vaux.

BROUGHTON, Thomas Duer, of the honourable East India Company's service, M.R.A.S., was the son of the Rev. Thomas Broughton of Bristol, and was educated at Eton. From thence he went out to the Bengal army of India, having chosen the profession of arms. He followed it with ardour, and whilst yet a subaltern he was actively engaged in the memorable siege of Seringapatam, which, on the 4th of May, 1799, overthrew the dynasty of Tippoo Saib, and conquered his empire. He was afterwards appointed commandant of the Cadet corps, a sort of college formed to receive the cadets, and teach and discipline them on their first arrival in the country, an office obviously requiring sound judgment and discreet management. But in December 1802 he received an important staff appointment, that of military resident with the Mahrattas. Here, too, he displayed that firmness and discretion so essential to a military man when placed in circumstances at once delicate and difficult. At a later period he was appointed to the command at Java; this, however, he did not hold long, as the island was given to the Dutch by the treaty. In the command of posts and battalions he was more than once honoured with public thanks from the governor, and with affectionate and gratifying addresses from the officers under his command. Colonel Broughton was fortunately in such a position in the service as to reap great advantages from an important reform made in the company's army some years back. Before this great change a colonel seldom got a regiment until he was an old man. Now every regiment was divided, and each battalion was made into a separate regiment. Thus, though the emoluments were greatly reduced, yet they were reached perhaps ten years sooner. Thus he became the colonel of a regiment, with its emoluments, at an early period of life. After this step he returned to England; but here, though quite at ease, an active mind, a warm and ardent temperament, could not remain long unemployed. He was honoured with the distinguished post of honorary secretary to the royal Asiatic society, and he was selected, not elected, a member of the Athenæum by a power specially vested in the committee, and the Mendicity society, one of the most useful in London. The schools, &c. of Marylebone, can well attest the activity of his mind and the warmth of his heart. After his return to Europe he visited almost every part of the British dominions, and every part of the south of Europe, worth attention. Colonel Broughton's first essay as a literary man was a free translation of a French novel, written by a warm admirer of Rousseau, called "Edward and Laura," in two volumes, published in 1809. He afterwards published a very valuable work upon the Mahrattas, written during his residence with that extraordinary people, in which he has thrown much light on their personal and curious history. He made himself master of the Persian language, and published a translation of some interesting and often beautiful Persian poetry, and also some specimens of Hindoo poetry; both these latter works were published by Mr Murray. During the latter years of his residence in India, the climate, which had not touched him before, affected him, and his health suffered. Whilst on a visit in Surrey, in the month of October, 1835, whither he went in good health, he was attacked with a fatal illness which carried him to the grave, after only a few days' illness, and at fifty-seven years of age. Colonel Broughton married a daughter of the late Mr Chamier, who was associated with Lord William Bentinck in the government of Madras, and whose son is now chief secretary to the same presidency. He left no issue.

BROWN, Robert, well known by his excellent agricultural writings, was born in the village of East Linton, Haddingtonshire, where he entered into business: but his natural genius soon led him to agricultural pursuits, which he followed with singular success. He commenced his agricultural

career at Westfortune, and soon afterwards removed to Markle. Mr Brown was a contemporary and intimate acquaintance of the late George Rennie, Esq., of Phantassie, and to the memory of them both agriculture owes a tribute of gratitude. Mr Rennie chiefly confined his attention to the practice of agriculture; and his fine estate furnished evidence of the skill with which his plans were devised, and of the accuracy with which they were executed. While Mr Brown followed close on Mr Rennie in the field, the energies of his mind were, however, more particularly directed to the literary department of agriculture. His "Treatise on Rural Affairs," and his articles in the Edinburgh "Farmer's Magazine" (of which he was conductor during fifteen years), evinced the soundness of his practical knowledge, and the energy of his intellectual faculties. His best articles are translated into the French and German languages; and "Robert Brown of Markle" is quoted by continental writers, as an authority on agricultural subjects. He took an active interest in the public welfare, especially when rural economy was concerned; and by his death the tenantry of Scotland lost a no less sincere friend than an able and zealous advocate. He died at Drylawhill, East Lothian, on the 14th Feb. 1831, aged seventy-four.

BURDER, George, editor for many years of the "Evangelical Magazine," was born in 1752, and died May 29, 1832, at the house of his son Dr Burder, in Brunswick-square, London. Mr Burder was for upwards of twenty years minister of West Orchard Chapel, Coventry; and for twenty-nine years, until within a few weeks of his death, he had officiated at Fetter-lane Chapel, London. He was the author or editor of the following publications: Bunyan's Pilgrim's Progress, with notes, 1786. Evangelical Truth Defended, 1788. Collin's Weaver's Pocket Book, or Weaving Spiritualized, 1794. Abridgement of Owen's Treatise on Justification by Faith, 1797. The Welsh Indians; or, a Collection of Papers respecting a People whose ancestors emigrated from Wales to America, in the year 1170, with Prince Madoc, and who are said now to inhabit a beautiful country on the west side of the Mississipi, 1797. The life of the late Rev. John Machin, formerly minister of the parish church of Astbury, Chesshire; with a recommendatory Preface, by Sir Charles Wolseley, 1799. Village Sermons, in six volumes, 1799—1812; a work which has been highly popular among his fraternity. Bunyan's Holy War with notes, 1803. Howel's History of the Holy Bible, enlarged and improved, 1805. Mather's Essays to do Good, revised and improved, 1807. Missionary Anecdotes, 1811. Henry's Family Bible, with improvements, in conjunction with the Rev. Joseph Hughes, 4to.

He was for many years secretary to the London Missionary society, which office he discharged gratuitously, and was extensively known as a man of unostentatious piety, enlightened benevolence, and considerable intellectual endowments.

BURNETT, Gilbert Thomas, F.L.S. professor of botany to king's college, London, to the hon. company of apothecaries, and to the medico-botanical society; was born April 15, 1800. He was the son of the late Mr Gilbert Burnett, surgeon of Great Marylebone Street; and the grandson of Gilbert Burnett, Esq., of Laleham, in Middlesex; whose father was the Rev. Gilbert Burnett, or Burnet, rector of Coggeshill, in Essex, and minister of St James's Clerkenwell, in which church lie the remains of their common ancestor, the celebrated bishop Burnett. The early days of professor Burnett were passed at Laleham, under the careful training of his grandmother, a lady of uncommon mental energy. It was in this situation, on the green banks of the Thames, that he first imbibed those botanical impressions which determined his career, and which he afterwards perfected into science, so much to his own honour and the advantage of society.

He was afterwards articled to Mr Ewbank, an eminent surgeon and apothecary, whose good-will and friendship he acquired by his assiduous attention to his profession, and his excellent moral conduct. At the expiration of his articles he took to his late father's practice, with the full confidence of the patients; which practice he would probably have much extended, had not a predilection for his favourite science directed his aspirations to become a teacher of botany; seconded also as his inclination was by a public call for such instruction. He accordingly commenced his career therein by a course of lectures on medical and general botany, in the anatomical school of the celebrated John Hunter, at the theatre of medicine, in Great Windmill Street;—in which course he briefly discussed the *principles*, *relations*, and *purposes* of the science:—first, as regarded the philosophy of organization, with the comparative anatomy and physiology of vegetables; secondly, with regard to the arrangement of plants, and especially to the classifications of Linnæus and Jussieu; and finally, with respect to the properties and productions of vegetables, both medicinal and economical. Into this wide and comprehensive view of his subject, our young professor was led by the course of his philosophic studies; for, to his ardent mind and indefatigable research, nothing was left unnoticed or untried that might throw light upon, or forward, his favourite pursuit, and that to which all the acts of his life had some reference and tendency. The lectures of Mr Burnett at the Hunterian theatre procured him the honorary appointment of professor of botany to the medico-botanical society, to which he was elected, much to the honour and advantage of that excellent institution. He now commenced the instructing of students in botany by herbarizing excursions during the summer months; combining the most agreeable and exciting with the most improving mode of instruction, by an immediate application to the science through nature—coupled with that amiable association with his pupils which at once secured their affection and attention. In the midst of these studies and occupations, including his practice as a surgeon, &c., and a regular course of lecturing at the school of physic at St George's hospital, he still found opportunity, by a judicious regulation of his time, to write on his particular science; on which he contributed papers to various reviews and periodical publications; and several of such papers, of much interest to the botanist, are to be found in the journals of the royal institution, at the theatre of which he regularly delivered lectures on botany during several seasons, and contributed discourses from the stores of his various knowledge on subjects of patriotic and popular interest in connection with his science, at the evening *conversazioni* of that institution.

These various exertions in the science having now established for Mr Burnett the well-earned re-

putation of an accomplished botanist and lecturer, he, on the opening of king's college, London, became a candidate for the chair of botanical professor to that new university, to which he was duly elected; and he commenced the duties of his new office by the delivery of its opening lecture, with great *éclat*, in the academic year of that foundation, 1831–2. Professor Burnett had now attained the height of his laudable ambition,—the point from which he could render botany most useful to society, his own advancement in the science, and his private emolument. Accordingly, his reputation as a lecturer on the science brought with his new appointment a numerous class of pupils, of whom he may be truly said to have had not only the admiration and respect due to an eminent teacher, but the genuine attachment due to his amiable manners. During the recesses from his college duties, and partly in the midst of them, professor Burnett found time for an extended social intercourse, a select but not extensive medical practice, the editing of the "London Medical and Surgical Journal," and other literary labours. It was during this season that he edited a new and beautiful edition of Dr Stephenson and Churchill's medical botany, in 3 vols. 8vo; and composed his two large volumes of *Outlines of Botany*. Not long before his death, and in a state of health rapidly declining, professor Burnett became a candidate, with other eminent botanists, for the vacant situation of professor of botany to the honourable company of apothecaries, and demonstrator of botany at Chelsea botanic garden; which appointments he obtained, with the unanimous approbation of the members of the society; and he delivered his first course of thirty lectures at their botanic garden during the summer of 1834. His death took place on the 27th July, 1835.

Professor Burnet was of a delicate and slender formation; rather small in person. His countenance was handsome and intellectual, and his eyes dark, sparkling, and expressive. He was altogether vivacious and intelligent, and infused those qualities into his lectures and literary compositions.

BURNEY, William, LL.D. an eminent teacher; died Feb. 20, 1832, at the royal academy, Cold Harbour, Gosport, in his seventieth year. In early life Dr Burney established the royal academy at Gosport, which has flourished more than forty years, and many of our most distinguished naval and military officers have been educated under this accomplished scholar and worthy man, whose urbanity and kindness secured the esteem and regard of his numerous pupils. Dr Burney was the author of an extensive Marine Dictionary, and other valuable works; and was accustomed to record a series of excellent Meteorological Observations.

BURNS, or INJURIES BY FIRE, are now very generally treated by the application of *cotton-wool*. It is said that cotton was first used as a remedy for burns in America, and that the discovery of its sanative properties was owing to accident. The child of a woman who was engaged in the preparation of cotton, happened, in some way or other, to get itself extensively burned with boiling water. The mother, in her agony, having no person with her at the time, laid the child down in some cotton on the floor, which promised to be the safest and softest position, and hastened away to procure medical assistance. The medical man of the village, however, was from home. The poor woman, on her return, found that the child had rolled about in the cotton and had become covered in the burned parts with a thick coating of it. The cotton appeared to have produced great relief of pain; the child had now ceased to cry and was actually cheerful. Some hours elapsed before the medical attendant arrived, but as the child continued cheerful and the cotton had become pretty firmly adherent to the sores, the mother would not allow of its being removed. Within the period of ten or twelve days the cotton began to drop off spontaneously; and in a fortnight from the receipt of the injury, the whole of it was detached, leaving a perfect cure,—the skin being without mark or contraction, and, in short, quite natural.

The cotton treatment has since had a pretty extensive trial in different parts of England and Scotland. As might have been expected, scientific observation has enabled medical men to point out the way in which the cotton may be most advantageously applied, and it has also enabled them to define the limits of its utility. The cotton should be applied to the burned parts as soon after the injury as is possible; and, if blisters have formed, they should not be opened. Where it can be done without incurring considerable delay, the cotton should be carded before its application into thin flakes. These flakes should be laid on the injured part, and piled one on the other until they form a soft covering, which, under high pressure, should be about an inch in thickness. A bandage should then be passed around the patient to prevent the cotton from falling off, but care must be taken not to draw the bandage tight or allow it to press the body. Its object is simply to retain the cotton in its place. After this, the first step, is taken, nothing remains to be done while the cotton is observed to *stick* to the surface of the injured part and to remain *dry*. Should any portion of the cotton, however, become *wet*, either through the discharge of water from the blisters, or the formation of purulent matter, and continue wet for a day or two, the attendant should, at the end of that time, pick the wetted cotton gently away, and supply its place with dry cotton. The general rule, consequently, is very plain. While the patient is free from pain, and the cotton dry and adherent to the surface of the burn, no change should be made; but should the cotton become wet at any part, and continue so for a day or two, the wetted portion is to be removed, and its place supplied with dry cotton. The treatment is to be conducted thus until the cure is completed.

The manner in which cotton acts in the cure of burns may be accounted for thus. It excludes the air and forms a warm and soft covering for the injured parts. Under this protection, the restorative powers of nature quickly repair the injury. But it is possible that cotton wool may have a sanative virtue beyond its mere softness and heat.

BURNS, Allan; a distinguished anatomist and surgical writer, was born at Glasgow, on the 18th Sept., 1781. His father was the Rev. Dr John Burns, minister of the Barony parish in that city, who held the situation for the long space of sixty-nine years, and died so recently as 1839, aged ninety-six. At the early age of fourteen, Allan entered the medical classes, and by his diligence and application, he was enabled two years afterwards to take upon himself the sole direction of the dissecting-rooms of his brother, Mr John Burns, who at that

time was a lecturer on anatomy and surgery in Glasgow. From the excellent opportunities he here enjoyed for cultivating the study of anatomy, and from the enthusiasm with which he pursued his inquiries, he soon became distinguished as a practical anatomist. In 1804, having resolved to enter the medical service of the army, he went to London for the purpose of obtaining a commission; but previous to his making application for one, he received the offer of a situation in St Petersburg, of which he accepted, and accordingly he left London for Russia. The empress Catherine, having established in St Peterburg an hospital on the English plan, was desirous of procuring for its director an able British surgeon. For this office Mr Burns was named to her majesty by his excellency Dr Creighton, as a gentleman in every way qualified; and the appointment was accordingly immediately offered for his acceptance, he at the same time being allowed six months of probation before any definite arrangement took place. Ere that time, however, elapsed, his love of country and home prevailed over the temptation of a lucrative engagement, and he left St Petersburg for Scotland in January, 1805, receiving from the empress, in token of good will, a very valuable diamond ring. On his return home, his brother having discontinued his lectures, he resolved to fill his place, and in the ensuing winter he commenced his career as a public lecturer on anatomy and surgery. As a teacher, he was zealous and eloquent. Possessing the most perfect knowledge of his profession, he was never at a loss in his descriptions, nor in want of materials for the illustration or elucidation of his subject. He had a happy talent for arresting the attention, and throwing around the dryest demonstrations a charm of which they could hardly be supposed susceptible. His perspicuity of manner could scarcely be surpassed. In his hands, the most intricate subject became clear and simple. But his career was not destined to be of long duration. Early in 1810, his health began to decline, and although he continued for two years longer to deliver lectures, it was often at the expense of great personal suffering. He died on the 22d of June, 1813.

Mr Burns's first publication was entitled "Observations on some of the most frequent and important Diseases of the Heart; or aneurism of the thoracic aorta; or preternatural pulsation in the epigastric region; and on the unusual origin and distribution of some of the large arteries of the human body: illustrated by cases." This appeared in 1809, 8vo. His second publication was entitled, "Observations on the Surgical Anatomy of the Head and Neck: illustrated by cases." This appeared in 1812, 8vo. Both these works, which embrace all Mr Burns's separate publications, are held in the very highest estimation by the profession. An edition of the latter was published in America, with a life of the author, and additional cases and observations, by Granville Sharp Pattison, professor of anatomy in the university of Maryland. From that life we have drawn the present brief notice. Mr Burns, it may be added, contributed two Essays to the Edinburgh Medical and Surgical Journal, one on the anatomy of the parts concerned in the operation for Crural Hernia, and the other on the operation of Lithotomy.

BURTON, Edward, D. D., regius professor of divinity in the university of Oxford; canon of Christ church; and rector of Ewelme, in Oxfordshire, was born February 13, 1794, at Shrewsbury, in which city his father, major Edward Burton, was then resident. He was educated at Westminster, but was never on the foundation; and, as a commoner, went to Christ church, of which house he was matriculated, May 15, 1812. Here, his remarkable application, his high talent, and exemplary conduct were soon noticed, and in the following year, a studentship was given him by one of the canons, on the express recommendation of the dean and chapter. In Easter, 1815, he was examined for his degree, and his name appears in the list of that term in the first class, both in classics and in mathematics. He took his degree of bachelor of arts Oct. 29, 1815; and soon after was ordained to the curacy of Tetenhall in Staffordshire, where he resided for some time in the zealous discharge of every duty connected with his profession. On the 28th of May 1818, he proceeded master of arts, and passed the greater part of that and the following year on the continent, visiting every place worthy of observation in France and Italy, inspecting the public libraries, collating MSS., and obtaining accurate information on all subjects connected with his favourite pursuits. Some idea of his research, as well as the extent of his inquiries, and the accuracy of his observation, may be formed from a perusal of his work on the Antiquities of Rome, which is perhaps the most useful, and at the same time the least pretending, publication concerning that interesting city. In 1824, Mr Burton accepted the office of select preacher in the university. His sermons were distinguished not more by their theological learning, acute criticism, and sound and at the same time candid argument, than by their unaffected piety, and that genuine Christian feeling which robs even religious polemics of all their bitterness. On the 12th of May, 1825, he married Helen, daughter of archdeacon Corbett, of Langor Hall, Shropshire; and immediately after went to reside in Oxford, where he began to take a prominent part in academical matters. He was nominated a public examiner in 1826. In 1827, on the promotion of Dr Lloyd to the bishopric of Oxford, he became his examining chaplain, and the following year was chosen to preach the Bampton Lectures. It will be seen, too, from the list of his works, that during the whole of this period his active mind was fully employed. A pamphlet on the absolving power of the Romish Church, his Testimonies of the Ante-Nicene Fathers, and the publication of his friend Dr Elmsley's notes on some of the plays of Euripides, prove that his life was anything rather than an idle one. On the 27th of November, 1828, he proceeded to the degree of bachelor in divinity, as a grand compounder.

In the summer of 1829, the university was deprived of the able services of her professor of divinity, by the premature death of Dr Lloyd, then also bishop of Oxford; and Mr Burton was immediately nominated to succeed him. Sir Robert Peel could not have recommended, nor the minister have made, a more judicious selection, nor one that gave greater satisfaction to the university at large, and to Christ church in particular, for all persons were agreed on the peculiar fitness of Mr Burton for the divinity chair. To the bishop of Oxford, the students in divinity were first indebted for an admirable and most effective addition to the usual mode of obtaining theological information—the establishment of *private classes*, in addition to

his public lectures. This plan Dr Burton (for he proceeded to his degree of doctor in divinity, June 26, 1829) followed up with equal zeal and diligence, devoting much of his time to the instruction of the future candidates for holy orders. Dr Burton's death took place at Ewelme, on the 19th of January, 1836. Dr Burton was appointed a delegate of the university press on his becoming professor of divinity. Of his utility and active exertions in that capacity, the following list of his publications bears ample testimony:—An Introduction to the Metres of the Greek Tragedians. 8vo. Oxford. This we believe was his first publication, and appeared in 1814. A Translation of a part of Aristotle's Ethics, afterwards completed by the present head master of Winchester School. 8vo. 1815. A Description of the Antiquities and other Curiosities of Rome. 8vo. Oxford, 1821. Second edition, with additions, 2 vols. 8vo. London, 1828. The Power of the Keys; or, Considerations upon the Absolving Powers of the Church, &c. 8vo. Oxford, 1823. Testimonies of the Ante-Nicene Fathers to the Divinity of Christ. 8vo. Clarendon Press, 1826. And again, with considerable alterations, 1829. The Works of George Bull, D.D., Bishop of St David's, collected and revised: to which is prefixed his Life, by Robert Nelson, Esq. 4 vols. 8vo. Clarendon Press, 1827. An Enquiry into the Heresies of the Apostolic Age, in Eight Sermons, at the Lecture founded by the Rev. John Bampton. 8vo. Oxford, 1829. An Attempt to ascertain the Chronology of the Acts of the Apostles, and of St Paul's Epistles. 8vo. Oxford, 1830. The Greek Testament, with English notes. 2 vols. 8vo. Oxford, 1830; and again 1835. Testimonies of the Ante-Nicene Fathers to the Doctrine of the Trinity and the Divinity of the Holy Ghost. 8vo. Clarendon Press, 1831. Remarks upon a Sermon preached [by Mr Bulteel of Exeter College,] at St Mary's, Feb. 6. 1831. 8vo. One Reason for not entering into Controversy with an anonymous Author of Strictures. 8vo. Oxford, 1831. Thoughts on the Demand for Church Reform. 8vo. Oxford, 1831. Advice for the proper Observance of the Sunday. 12mo. London, 1831; and again in 1834. Lectures upon the Ecclesiastical History of the First Century. 8vo. Oxford, 1831. Lectures upon the Ecclesiastical History of the Second and Third Centuries. 8vo. London, 1833.—These Lectures were collected and printed in 2 vols. 8vo. Oxford, 1833, under the following title, "Lectures, &c. from the Crucifixion of Jesus Christ to the Year 313.' Sermon before the University of Oxford, on the 21st of March, 1832, being the day appointed for a general humiliation. 8vo. Sermons preached before the University of Oxford. 8vo. London, 1832. They are twenty in number, and were preached between 1825 and 1831. The Benefit of the Sacrament of the Lord's Supper explained. 12mo. London, 1832; again in 1834. Pearson on the Creed. A new edition, revised and corrected. 2 vols. 8vo. University Press, 1833. Thoughts on the Separation of Church and State. 8vo. London, 1834.

Upon the death of Dr Elmsley, Dr Burton published a new edition of the Medea and Heraclidæ of Euripides, with Notes selected from the MSS. of that distinguished scholar. 8vo. Clarendon Press, 1828. When his friend and patron, bishop Lloyd, died, he superintended an edition of the Greek Testament, with parallel passages, and the Canons of Eusebius, commenced by that prelate, 12mo. 1829; as well as completed an edition of Cranmer's Catechism, the preparation of which had been made by him, but the work left unpublished. They were both published at the university press; the latter in 1829, 8vo. He was also at the time of his death engaged in preparing for the press a series of tracts in defence of the church of England, more especially against the errors of popery. Jeremy Taylor's Dissuasive was intended to form the first of the series, and actually printing; and he had also undertaken the superintendence of a new edition of bishop Beveridge on the thirty-nine articles, with the addition of that prelate's observations on the last six articles, supposed to have been lost, but lately recovered, and now in MS. in the library of the president of Magdalen.

BUSHMILLS; a market-town in the county of Antrim, Ireland, six miles N. E. by N. from Coleraine, and 125 N. from Dublin. It is the general place of resort for persons visiting the Giants' Causeway, about two miles distant. The town is thriving, and it owes much of its prosperity to the exertions of Sir F. W. Macnaghten, bart., whose seat adjoins it. It already contains a commodious hotel, a large distillery, paper and flour mills, &c. Population above 500.

BUTLER, Charles, an eminent lawyer and voluminous writer, was born on the 15th of August, 1750, at the house of his father, Mr James Butler, who carried on the trade of a linen draper in Pall Mall. His uncle was the Reverend Allan Butler, the author of "The Lives of the Saints," and several other able works. Bred up in the Roman Catholic religion, he was in the first instance sent for education to an academy kept by a Roman Catholic at Hammersmith, and afterwards removed to an English Catholic college in the university of Douay, under the care of secular priests. Having highly distinguished himself at Douay, he returned to England, and was entered at Lincoln's Inn in the year 1775. Soon afterwards he became the pupil of Mr Holiday, well known as a conveyancer of that day. When he quitted the chambers of Mr Holiday, the legal prospect for one holding his religious opinions was sufficiently bounded. A Roman Catholic could not be called to the bar, or hold any official situation whatever. Under these circumstances, he selected that branch of the law which he considered as most suited to his taste, and the exercise of his abilities, and commenced practice under the bar as a conveyancer. He soon obtained a very considerable practice, and acquired the esteem and respect of his profession: indeed his mild and conciliatory manners, his varied information, and his extensive knowledge, could not fail to make his acquaintance and friendship much sought for.

The following is a list of his principal publications:—"Essay on Houses of Industry," published in 1773. "An Essay on the Legality of impressing Seamen." "Notes to Coke upon Littleton," his most celebrated professional work. "*Horæ Biblicæ*," 1797. There have been five editions of the *Horæ Biblicæ;* and it forms the first volume of Mr Butler's collected works. It has also been translated into French. "*Horæ Juridicæ Subsecivæ;* being a connected series of notes respecting the Geography, Chronoloy, and Literary History of the principal codes and original documents of the Grecian, Roman, Feudal, and Canon Laws," 1804. This valuable work was reprinted in 1807, and is included in the second volume of Mr Butler's

works. "Succinct History of the geographical and political Revolutions of the Empire of Germany, or the principal states which composed the Empire of Charlemagne, from his coronation in 800 to its dissolution in 1806; with some account of the imperial house of Hapsburgh, and of the six secular electors of Germay; and of Roman, German, French, and English nobility," 1806. Of this work there were three editions. "Essay on Contingent Remainders and Executory Devises;" with notes, 1809. Mr Butler was a constant advocate of his own religious community; although he was in some respects so opposed to the more rigid portion of it, that bishop Milner, on one occasion, angrily spoke of him as "a decided enemy to the hierarchy of his church." His earliest writings connected with his religious party were in the three blue books privately circulated among the Roman Catholics in 1790–1792, and which were jointly written by Mr Joseph Wilkes, a benedictine monk, and Mr Butler. "An Historical account of the Laws respecting Roman Catholics" was published by Mr Butler in 1795. "A Letter to an Irish Nobleman on a proposed Repeal of the Penal Laws against the Irish Catholics;" and "A Letter to a Nobleman on the Coronation Oath," both in 1801. "A Letter to a Catholic Gentleman on Bonaparte's projected Invasion," 1803; and "A Letter to an Irish Gentleman on the fifth Resolution of the English Catholics, at their meeting, January 31, 1810." In 1813, when a vigorous effort was made for the removal of the restrictive laws, Mr Butler published an "Appeal to the Protestants of Great Britain and Ireland;" several thousands of which were sold or circulated. In 1815 Mr Butler delivered an "Inaugural Oration, on occasion of the ceremony of laying the first stone of the London Institution:" it was published at the request of the managers, and he had the honour of being appointed standing counsel to the establishment. He subsequently drew up the act of parliament which secured its prosperity. He soon after published his "Historical Memoirs of the church of France, in the reigns of Lewis XIV., Lewis XV., Lewis XVI., and the French Revolution," in one volume, octavo. The same studies led him to several biographical works, which were published in the following order:—"The Life of Fenelon, Archbishop of Cambray; to which are added, the Lives of St Vincent of Paul, and Henri-Marie de Boudon; a Letter on Ancient and Modern Music; and Historical Minutes of the society of Jesus," 1810, 8vo. "The Life and Writings of J. B. Bossuet, bishop of Meaux," 1812. "The Lives of *Dom. Armand-Jean le Bonthillier de Rancé*, of the Monastery of *La Trappe;* and of *Thomas à Kempis*. With some account of the principal religious and military orders of the Roman Catholic church," 1814, 8vo. "Biographical account of the chancellor *l'Hôpital* and of the chancellor *d'Aguesseau*, with a short historical notice of the Mississippi Scheme," 1814. Mr Butler's subsequent works were, "An historical and Literary account of the Formularies, Confessions of Faith, or Symbolic books of the Roman Catholic, Greek, and principal Protestant churches," 1816, 8vo. "Historical Memorials respecting the English, Irish, and Scottish Catholics, from the Reformation to the present Time," 1819, 2 vols. 8vo. "Dissertation on Mystical Devotion;" published in the Retrospective Review, 1820. "An Inquiry, whether the declaration against Transubstantiation, contained in act 30 Charles II., could be conscientiously taken by a sincere Protestant," 1822. "Reminiscences of Charles Butler, Esq., of Lincoln's Inn," (chiefly consisting of the history of his literary labours, and additional reflections on the same subjects,) 1822; second volume, 1827. "A continuation of the Rev. Alban Butler's Lives of the Saints to the present time, with some Biographical accounts of the holy family, Pope Pius VI., cardinal Ximenes, cardinal Bellarmine, Bartholomew de Martyribus, and St Vincent of Paul: with a republication of his Historical Memoirs of the society of Jesus," 1823. "The book of the Roman Catholic church; in a series of Letters addressed to Robert Southey, Esq., on his 'Book of the Church,'" 1825, 8vo. "The Life of Erasmus; with Historical Remarks on the state of Literature between the tenth and sixteenth centuries," 1825. "The Life of Hugo Grotius; with brief minutes of the civil, ecclesiastical, and literary history of the Netherlands," 1826. "Reply to the Quarterly Review, on the Revelations of *La Sœur Nativité*," 1826. "A Letter on the Coronation Oath; 1827, 8vo. "A short reply to Dr Phillpotts' Answer (in his 'Letters to a Layman') to Mr Butler's Letters on the Coronation Oath," 1828, 8vo. "A Memoir of the Catholic Relief Bill, passed in 1829, being a sequel and conclusion of the 'Historical Memoirs of the English, Irish, and Scottish Catholics,'" 1829, 8vo. "Memoir of the Life of *Henry-Francis d'Aguesseau:* with an account of the Roman and canon law," 1830. Two works which Mr Butler commenced and left unfinished, were a "Life of Christ, or Paraphrastic Harmony of the Gospels;" and a "History of the Binomial Theorem." He mentions in his "Reminiscences" that some of his happiest hours of study were those devoted to mathematics; but that he divorced himself from them because he found that they interfered with his professional duties.

Mr Butler's habits of life were remarkably temperate and regular; and his application to intellectual pursuits was unremitting. He married a lady of the name of Eyston, and left two surviving daughters; the elder married to Colonel Stoner, the younger to Andrew H. Lynch, Esq., a chancery barrister. He preserved to the last the faculties of his mind; although his bodily health had much declined. His last illness, however, was of short duration. He died at his house in Great Ormond Street, on the 2d of June, 1832, aged nearly eighty-two.

BYLAND ABBEY, in the north riding of Yorkshire. Byland Abbey appears to have been founded in the twelfth century, by Roger de Mowbray, at the instance of his mother. The abbot and twelve monks of Furness abbey, in Lancashire, having been disturbed by the incursions of the Scots, fled to York, where they were for some time entertained by the archbishop, by whom they were recommended to the protection of De Mowbray. Being a minor, however, his mother received them at her castle, and she afterwards sent them to a near relation of her own, who had been a monk at Whitby, but who then led an eremetical life at Hode. Here she supplied them with necessaries until her son attained his majority, when he granted them a sufficient portion of land for their support. The monks soon afterwards procured, at a general chapter of their order, held in France, an exemption from their former subjection to Furness. They remained at Hode

several years, when, on the ground that their former grant did not afford them sufficient space, the church and town of Byland were granted to them for the purpose of building an abbey. Here they were too near the abbey of Rievaulx, being within the sound of its bells; and as there were some other inconveniences attached to the place, De Mowbray granted them another piece of land, on which to erect their monastery; and they then built a small church, a cloister, and houses. Their possessions were soon considerably increased, and they added to the value of them by clearing the woodland and draining the marshes. They removed, in 1177, a little to the eastward, where the abbey of Byland was built and dedicated to the virgin Mary.

Byland abbey was not included in the number of monasteries which were first dissolved, and by the king's letters-patent, dated January 28, 1537, it was refounded; but two years afterwards it was surrendered, when the abbot and monks received pensions. There were seven bells in the abbey, and it contained 516 ounces of plate. The lead which was stripped off the building amounted to 100 fodder, and, with the bells and plate, was sold for the king's use.

All that remains of Byland is comparatively a fragment, but it is sufficient to show that the abbey must have been a fine specimen of church architecture. The doorway is richly ornamented and the windows elegantly formed. The population of the township of *Byland-cum-Membris*, in the parish of Coxwold, amounted in 1841, to 282.

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CABBAGE-TREE; a splendid tree, to be found in the West Indies, the *Areca Oberacea* of Linnæus. The trunk is usually about six or seven inches in diameter, and it grows straight as an arrow to the height of 150 or 200 feet. The substance of the tree, for about two or three inches in depth, is of a dark colour, and extremely hard and solid; within this is a rather white pith intermingled with small veins of a more ligneous nature. The hue of the bark resembles that of the ash, and is faintly marked at the distance of every four or five inches by the *vestigia* of the branches that have fallen. The appearance of the bark continues the same till within about twenty or thirty feet of the summit of the tree, where it changes to a beautiful deep sea-green, which colour prevails to the top. About five feet above the commencement of this colour, numerous branches encircle the stem, the lowermost spreading horizontally with great regularity, while the superior branches incline wavingly downwards with all the graceful elegance of so many plumes of feathers. The branches, which attain when full grown a length of about fifteen feet, are closely set on the stem alternately rising one above another. Their broad curved sockets completely surround the body of the tree, which is again visible among the upper branches, and is there enveloped in an upright green conic spire, which beautifully terminates its majestic height. On the upper side the branches are slightly grooved and rounded beneath. An immense number of pinnated leaves proceed from the branches, some of which are three feet in length and an inch and a half in breadth, gradually narrowing towards their points, and decreasing in length as they approach the extremities of the branches. The upper side of the leaf is smooth and shining—a strong and prominent rib in the middle of each affords it support on the lower side. It is part of the economy of this tree that the inferior or lower branch drops off monthly, bearing with it an exfoliated circular *lamina* of the green part of the stem; whenever this occurs, the green conic spire which arises from among the superior branches, partially bursts and sends forth a young branch, which remains the uppermost till the same process is again renewed, so that the spire, the common parent of all, thus continually supplies the loss of the lower branches, and the beauty of the tree remains undiminished. The green-coloured part of the stem differs not only in hue but in substance from that of the other part, as it is formed of several *laminæ* or separate layers of a tough bark of a like nature, about a quarter of an inch in thickness, which are arranged closely over each other. All the branches, as they successively grow to be old, are united by the broad socket of the footstalk to this outer *lamina* or layer; some time before the lower branch is quite withered, the green circular layer, which before appeared a solid part of the tree, divides vertically, preparatory to its falling off with the branch to which it is strongly attached, leaving the next succeeding layer apparently a constituent part of the tree. The first, second, and third, and sometimes the fourth of these *laminæ* are green on the exterior and white within. The remainder of them have the outer side of a bright lemon colour, and the interior white. The part called the cabbage consists of the inner snow-white flakes, which contain a considerable portion of oil; they have something the flavour of an almond, and are esteemed a sweet and agrecable esculent; they are eaten raw, fried, or boiled, and, when they have undergone the latter process, are not unlike cabbage. Cutting the cabbage destroys the tree, which may be the growth of half a century. The cabbage is consequently a dish principally seen at entertainments, and two negroes are usually dispatched to the mountains where these trees abound, to cut what are required. The blossom displays itself at that part of the stem of the tree where the two colours unite. On its first appearance it is a husky *spatha*, growing to a length of about twenty inches, which is full of small white stringy filaments, with alternate protuberant knobs, not unlike a fringe of coarse white knotted thread; farinaceous yellow seed in embryo, resembling fine saw-dust, is abundantly dispersed among the filaments, which, after they are cleared

of this dust, are converted into an excellent pickle. If the *spatha* is not cut young for this purpose, when ripe it bursts, and the filaments become ligneous with a bushy growth, consisting of many small leaves, which produce a considerable number of small oval thin-shelled nuts, about the size of unhusked coffee berries. The soft part of the leaves of this tree being removed, the inside texture is spun in the same manner as hemp or flax, and is used for cordage, fishing-nets, and things where strength is desirable. From the hard outside of the stem, laths for houses are cut, which are of great durability.

CAFFRES (*a.*) The Caffres, near the Cape of Good Hope, have for many years been suffering from their contact with civilized men. In the parliamentary reports upon this subject, we find by the evidence of several respectable and important witnesses, that, in some instances, the Caffres are to be considered as having had hard measure dealt out to them by the colonial authorities. This was more especially the case, according to the testimony given, as regarded one chief of the Caffres, named Macomo, a man of most remarkable character and talents. The Caffre people, it must be observed, though they acknowledge one nominal head or king, are in reality ruled by various independent chiefs, and of these Macomo was one of the most powerful. His father and predecessor Gaika had been possessed of much greater power and wider territories than the son, but had found himself necessitated to yield up a large portion of his lands to the colonists. Macomo received no education, all the culture which his mind ever obtained being derived from occasional intercourse with missionaries, after he had grown up to manhood. From the period of Gaika's concessions in 1819, up to the year 1829, Macomo and his tribe dwelt upon the Kat river, following their pastoral life in peace, and cultivating their corn-fields. Suddenly, in 1829, Macomo and his people were ejected from the lands on the Kat river, on the plea, that, by an old treaty of Gaika, these lands had been ceded to the colony. Macomo retired, almost without a murmur, to a district farther inland, leaving the very grain growing upon his fields. He took up a new position on the banks of the river Chumie, and here he and his tribe dwelt till 1833, when they were again driven out to seek a new home, almost without a pretence, if we may judge from the reports, to justify the expulsion. On this occasion, Macomo did make a remonstrance in a document addressed to an influential person of the colony, Dr Philip, who vouches for its authenticity. In the whole of this letter—this savage Caffre's letter—there is (says Dr Philip) "a beautiful simplicity, a touching pathos, a confiding magnanimity, a dignified remonstrance, which shows its author to be no common man."

He mentions in his appeal, that he had not only restored, on application, the cattle taken by the unruly among his own dependents, but had paid back to the colonists the property stolen by those with whom he had nought to do—all for the sake of peace. One would think that after the colonists, whether by fair or by foul play, had twice unseated Macomo, and driven him to seek a new home, they would scarcely expect him to hold the same power as he had done, or make him answerable for the thefts of his Caffre brethren. Another appeal to Dr Philip, made some time after the chief's second expulsion, will show whether this was the case or not. "You have had people," said Macomo, "in Grahams-town, (a colonial village.) Last time the governor was there, some of them stole the chain of his waggon; did he punish the town for the theft? When any thing is stolen and carried from one district to another, and the thieves cannot be found, is one of the magistrates visited with the punishment due to the thieves? I have guarded the frontiers of the colony to prevent the Caffres from stealing from the colonists, for many years; and what has been my reward? Driven from my country, I am now without a home for myself and my people, and the few cattle left to me are made answerable for every theft alleged to have been committed, though it may have been done by people who acknowledge no chief, and who live by thieving, and have no other abode than the bushes."

The next incident worthy of notice, in Macomo's history, occurred about a year after his second expulsion. To understand this, it must be premised that the grounds on the Kat river, from which he had been first expelled, in 1829, had been given up by the colony to a body of Hottentots, who had there formed a flourishing settlement. The Hottentots, being the aborigines of a district nearer the Cape than the Caffres, had long enjoyed the advantage of missionaries, &c.; and though their race had, as usual, dwindled away greatly in numbers, those who remained had advanced considerably in civilization. On the Kat river, then, in 1834, the Hottentots had a thriving settlement. Macomo, at that time a wanderer for the second time, had the magnanimity to visit the Kat river, and congratulate on their prosperity the new occupants of those lands, which were indubitably his own by right? He appeared at a missionary meeting, and addressed the assembled settlers.

Though the chief came by express invitation from the Kat river settlers, he had acted contrary to a colonial statute in entering colonial grounds; and, accordingly, scarcely was the assembly over, when a serjeant and several soldiers came to take Macomo into custody. The Caffre yielded without resistance, but this did not save him, according to the statement of the only credible witness present, from threats and insult. After carrying Macomo to the next post, the officials before whom he was taken set him free, finding nothing against him.

Macomo bore all that befell him patiently till the occurrence of a new evil in 1835. One of the patrol parties which were continually scouring his country, and of which he had again and again fruitlessly complained, at length committed an injury, which stung the Caffre chief beyond endurance. Xo-Xo, Macomo's brother, was wantonly shot in the head with slugs by a patrolling party, as he was peacefully remonstrating against the seizure of some Caffre cattle, which were under his charge. On application being made for redress of this cruel injury, Macomo and his friends were told that the colonial powers could not discover the officer who commanded the patrol. The Caffre chiefs lost all patience, and war, marked by many atrocities, followed the shooting of Xo-Xo.

In the year 1824, an English naturalist, in the course of a tour in Cafferland, had an opportunity of witnessing the justice and impartiality of Macomo in his capacity of judge. Being dissatisfied with the conduct of his slave, whom he had brought with him from the Cape colony, after some alter-

cation and the infliction of a few blows with his *sjamboc* (whip of rhinoceros hide), he carried the man before Macomo. Here the master and slave filed cross bills against each other. The slave produced witnesses to prove that his master had struck and abused him without cause: the master accused the slave of laziness, insolence and disobedience, and demanded that he should be punished by a severe flogging. Macomo, after hearing both parties, informed them that in Caffreland there were no slaves; he must, therefore, consider them merely as two men who had made a bargain with each other. "Now it appears," said he to the Englishman, "that you have struck this man and otherwise ill-treated him, but you can show no proof that he had injured you by offering you violence. I therefore declare your bargain at an end; he is free to go where he pleases; and you shall pay him an ox for the wrong you have done him." At this decision our countryman was highly incensed, and refused to submit. "He deserved punishment, not reward," said he, "for his insolence." "You have not proved that," said Macomo; "but had it been so, you should have brought him to me. Why do I sit here from sun-rise to sun-set, if need be? It is to decide between man and man, in cases where their anger blinds them, and hinders their judgment. If men use their hands in secret, instead of their tongues before the judge or the old men, whose life would be worth a husk of corn?"

The Caffres are admitted by most travellers, to be a well formed, decent-featured, and comely people. Their countenances are more European than African, although their hair is woolly and their colour dark brown. From their physical traits, Barrow has drawn the inference of an Arabic origin for them. He says, they have not the smallest resemblance to the negroes in either conformation or features, and that they differ from the Arab superficially in nothing but a deeper shade of complexion; and this theory is somewhat plausibly confirmed in the view of this writer by their nomadic habits, their hospitality, the shape of their habitations, and especially their scrupulous observance of the rite of circumcision. Pringle also supports this opinion, and so does Mr Kay; and they both adduce additional facts in apparent confirmation of it. There is nothing incredible, or even improbable in the theory itself, especially since it is well known that the wandering Bedouins have penetrated into almost every section of the continent, and have even planted themselves on the South African islands.

The apparel of the Caffres is made wholly of the skins of beasts, excepting those cases only where the customs of their civilized neighbours have been introduced among them. These changes have occurred at and about the missionary stations, and may generally be considered,—taking into view the attachment which all barbarians (as well as some partly civilized people) feel for old customs,—as a tolerably accurate indication of the more important intellectual and moral advances to which they commonly correspond.

The imitative propensity, as well as the communicative, it is worth noting, are universally traits in the African character,—in which, by the way, they differ diametrically from the Indians,—and such as may be pronounced of the first interest, in reference to the competency and tendency of their possessors to a state of civilization. This social disposition is indeed often carried to an extent which most travellers, if not missionaries, would call meddlesome and troublesome, not to say ridiculous. The Landers were not a little amused by a native who, after indulging his curiosity in an examination of their premises, baggage and all, not meeting with any thing which suited his taste better for a hat, finally encircled his cranium with the tin top of a jelly-pot, which was marked in large letters "concentrated gravy," and in that guise strutted about the encampment. The Caffre lady, in what may be called the chrysalis stage of transmutation, is not unfrequently seen promenading, in the vicinity of the mission-houses, with an English petticoat suspended from the neck instead of the waist, while the gentleman in attendance makes himself nearly as conspicuous, by sporting for a gala dress a pair of leather trowsers, surmounted by a check shirt. So they can get on any thing civilized, and keep it on, it matters little of what material the decorations may be made, or in what order they are fastened to the frame of the wearers. The aborigines of America have been much slower to imitate, and still more awkward also in the process. Witness the tradition transmitted by the Dutch party who first landed on Manhattoes. They made a donation of stockings and axes,—two valuable articles,—to the chiefs of the party which entertained them; and when the visit was repeated the next season, it was ascertained that the stockings had been converted into tobacco-pouches, while the axes were generally used for bosom-pins. In regard to the taste of the Caffres in matters of dress, ornaments of various kinds are extensively worn. These consist chiefly of beads, bones, feathers, and metallic bracelets, some thirty of the latter being occasionally seen on the arms of a great man, that is, a stout man; to all which the same dignified class often append, like the chiefs of the northern African tribes, the elegant embellishment of a cow's tail, swung from the knee.

The wealth of the Caffres consists of their herds and flocks, and their occupation, of the care of them;—there being probably no barbarous nation in the world, who are so systematically and scientifically devoted to grazing. The Caffre is never so happy, as when engaged in something calculated to increase the numbers or improve the appearance of his cattle. Such is his perfect acquaintance with his herd, that one of a thousand would be immediately missed; and he observes even the turn of the horns, or the slightest spots on the hide, so minutely, as to identify every individual almost infallibly after seeing them two or three times. Cattle-folds are constructed in every hamlet,—generally on the sunny side of a hill,—and are made of circular hedges, so compact as to protect the herd in winter from the cold in some measure, as well as from the wild animals which infest the country.

It is a curious illustration of the dignity which the grazing profession possesses in the view of the Caffres, that the cattle-field is always used as the place of public meetings and resort. Cattle constitute the currency in a great degree. Brides also are bought and sold for so many bullocks,—the proprietor in conversation frequently classing his wife and his pack-ox together, and estimating his property according to the joint amount of his herd and his daughters. Indeed his conduct towards his cattle is generally of a much more feeling character, than that which he sometimes evinces towards the partner of his bosom. Travelling, in

the Cape colony, is performed by the Europeans mostly with the aid of oxen,—not less than four or five pairs being customarily attached to the unwieldy and lumbering waggons of the country,—and this practice again, as well as the price which the hides of the animals will bring in the civilized market, where one is at hand, adds to the value of the herd. Even the amusements of these people are derived from the same source. Racing young cattle is a favourite sport; and a part of the herd are trained to run at an astonishing rate, the oddity, if not beauty, of the appearance of this singular procession being doubtless not a little augmented by the Caffre custom of twisting the horns of the animals, while they are yet flexile, into all sorts of fantastical shapes. In a word, the ox is to the Caffre what the horse is to the Bedouin, or the deer to the Laplander,—shelter, vesture, carrier, family and food.

As might be expected, the principal aliment of these tribes is *milk*, which they use, like the Arabs, in a sour, curdled state; next to this article, boiled corn, (Indian)—for they cultivate, after a fashion, considerable tracts of fertile land; and more generally, a species of millet, also pumpkins, a kind of sugar-cane, gourds, fruits, and a few esculent roots of minor importance. The use of animal food is rare. Veal is objectionable in an economical view. Swine's flesh is rejected by the Caffres with abhorrence. The same is the case with the feathered tribe to some extent; none of them keep poultry of any sort; and eggs, as an article of food, are altogether contraband. Nay, Caffres will have nothing to do with the fish of the sea, which they for the most part regard as company only for snakes, so that, although they live almost wholly on or near the coast, the entire line of which abounds with the choicest fish, they are ignorant even of the art of casting a net. Neither will they eat elephant's flesh on any occasion, or even undertake, like the Hindoos, to domesticate that animal. This is the more remarkable, since he is always regarded as favourite game, and the passage of a herd in the neighbourhood of a hamlet is the signal for a general hue and cry. The tusks are the prize sought for. One of them falls to the lot of him who first pierces the game with his weapon, and the other to the chief of the party.

The Caffre does not, however, subsist wholly on vegetable food. The issue of the very elephant hunts, is usually celebrated by the feasting of the whole company upon an ox, which the successful hunter must furnish: and on other occasions a rhinoceros is despatched and devoured with as much *goût*, and as little ceremony or cookery, as if he were no bigger than a cabbage-head. Plain animal food, without salt, seasoning, or vegetable, is the greatest luxury the Caffre desires, and whenever any one kills a cow, it is an invariable custom throughout the country for all around to flock to the feast. Even this custom, however, rather indicates the infrequency of the use of such food, and on the whole it may doubtless be asserted safely, that it enters in a very small proportion into their regular subsistence. They are substantially a milk-fed nation; and if the physiologists, philosophers, or physicians have any theories to form or confirm in respect to the influence of such aliment on the character of the people with whom it prevails, they will probably find few cases where the data are more conveniently set before them.

Whatever the cause may be, the Caffres are generally admitted to be favourably distinguished from most barbarous nations by their mildness of disposition,—a position, which is not much contradicted by the existence of many harsh and cruel customs among them, rather appertinent to condition than character, and chiefly the immediate result of excessive superstition. Travellers generally, and especially missionaries, when known to be such, have always been treated with signal civility. This is confirmed by Barrow, Lichenstein, Alberti, General Janssens, and others. Vasco de Gama originally named them *boã gente*,—"good people;" and, we have the testimony of the American captain Stout, of the ship Hercules, who, in his narrative of the shipwreck of his vessel on this coast, acknowledges that he found in the natives a hospitality, and received from them a protection, which on many of the shores of the polished nations of Europe he might have looked for in vain. "They made a fire to dry us, slaughtered a bullock, conducted us to a spring of water, &c. Such was the conduct of a people described as possessing no other semblance of the human character, than what they derive from their formation.' The reputation of the Caffres, for what this gentleman calls "the compassionate feelings which adorn humanity," may, on the whole, be considered as sufficiently established.

Their reputation for honesty does not perhaps rest on so good a foundation. In 1828, when Mr Kay visited Gaika, a celebrated and principal chief, with the view of obtaining permission to establish a missionary station in his country, (in which he succeeded) one of that potentate's wives contrived to steal a silk handkerchief from the pocket of a gentleman in the company, while he was engaged in negotiation with the husband. When Mr Kay went into Caffreland a second time, during the year last named, on the same errand as before, he gives a graphic description of an interview with the natives, which took place under the spreading branches of a thorn-tree, on the banks of a solitary stream. The news of his arrival collected great crowds of visitors the next morning; and "their deportment was indeed friendly," says Mr Kay, "but circumstances soon convinced us, that they would consider it no evil to pick and steal whenever opportunity enabled them to do so." It is remarkable that a remedy was found in this instance by hiring one of the depredators, for the consideration of a few beads, to guard the exposed property of the tent. This he did to the perfect satisfaction of his employers, and the missionary embraces with evident pleasure this occasion of stating, as an offset to the vice before charged upon the Caffre, that he never knew a single instance of his betraying his trust in any thing which was fairly and fully committed to his charge. "Do this," he adds, "and the utmost confidence may in general be placed in him."

It may, however, be remarked, that a thieving disposition is to some extent an almost universal trait of savage character. If the Caffre carries it farther than some others, by stealing, whenever he can conveniently, as Mr Kay somewhere states, from even his best friends of his own tribe, and by inculcating this Spartan doctrine systematically, in early life, upon the minds of his children, perhaps this pre-eminence may be fairly attributed in a great measure to the nature of the intercourse he has held for a century and a half with his profligate European neighbours, and especially to the depredations and other injuries he has suffered at their

hands. Unprincipled war has degenerated into rapine on a smaller scale, rapine into robbery, robbery into larceny, and the habit thus acquired, particularly if deemed honourable, could not fail of being finally exercised with considerably less discrimination as to subjects, than might have been the *honest* intention in the outset. The African tribes generally, it may be noticed, have credit among travellers for no small share of this disordered acquisitiveness, and it is no where so rife as with those nations which have suffered most from the slave-trade. Crime, like disease, is contagious.

The government of the Caffres resembles that of the North American natives, and indeed that of most of the African tribes. It is ostensibly democratic, and substantially despotic, respectively in the highest degree; the personal superiority of the chiefs, and the advantage they derive from traditionary authority, being for the most part sufficient to enable them to treat their subjects with the most unqualified, though only customary, severity of discipline or imposition, as the case may be. By personal superiority, we mean simply such qualifications as create personal influence among such barbarians as the Caffres. The principal ones are energy and cunning.

The degradation of the female sex is considered by Dr Robertson the characteristic of the savage in all countries. If the degree of it fairly indicate that of the grossness of his barbarism, the Caffres must be low indeed in the human scale. No where are women, as such, such perfect slaves; no where are they so much used as mere chattels. Even the building devolves on them, as well as the digging, sowing, planting and reaping. The common price of a *bride*, is from five to ten head of cattle, though one of high birth, as the term is,—much as in civilized countries we speak of the descendant of a famous horse,—will bring five or six times that amount. After marriage comes endless drudgery, till the woman is fortunate enough either to be worn out with her slavery, or to be left a widow. Indeed, the tyranny of custom follows her even beyond that of her husband, for not only is she compelled, on his decease, to retire alone into the wilderness for a considerable time, under pretext of mourning,—whatever the season or her condition may be,—but, the only dowry allotted her from his property is a new garment from the hide of one of his oxen. Even the husband's hut is destroyed, so that the first care of the widow, on her return, must be to erect a new one, as usual, with her own hands. That the Caffre women, under all these circumstances, are able to maintain a reputation rather superior to that of savages generally, for vivacity of manners, is a marvel worthy of study. The triumph of nature, however, over man, does not last through life. Even the personal beauty of the young is here, as among the Western Africans described by Major Laing, pretty soon changed into even "disgusting ugliness."

All savages are more or less belligerent, and perhaps the South Africans, though less bloodthirsty than many other nations, are as much as any in this respect the victims of custom and circumstances. Their neighbours on all sides are barbarous like themselves, valuing their cattle as dearly, and as ready to fight for them, in defence or in depredation,—excepting only the frontier population of the European colony. The character of this frontier population may be known from its name. It is bad enough every where,—enough effectually to prevent the civilization of any conterminous people,—but here, the very *beau ideal* of bastard barbarism. The Caffres and the Dutch boors,—the latter extremely ignorant and rude, remote from the supervision of even the colonial government, and living in the most scattered manner conceivable,—have always been tugging at each others' throats. Unfortunately, the English, although only thirty-five years in possession of the colony, have during that short period outstripped, in their horrible oppression of the natives, even the cold-blooded cruelties of the Dutch boors of the last century. No British traveller has denied this, so far as we know, and most of them confirm it in explicit terms. Among these may be named Thompson, Barrow, Pringle, Dr Philip, and the Rev. Stephen Kay. Lieutenant Rose, in his Four Years in South Africa, states that official orders have been issued, "that all Caffres appearing within the proclaimed line should be *shot*." Again,—"the crime was individual, but the punishment general; the duty of the commanders was to destroy, to burn the habitations, and to seize the cattle; and they did their duty." "I hate the policy that turns the English soldier *into the cold-blooded butcher of the unresisting native*," &c. Such, is the testimony of an officer for some time stationed on the Caffre frontier, and officially cognizant of the transactions he thus describes.

CALCUTTA. (*a.*) An account showing the total amount of the import and export trade of Calcutta in 1836-37, and 1837-38; showing also the amount of the trade with each country, and the proportion *per cent.* which the trade with each country bears to the total amount of the trade.—*Bell's Review of the Commerce of Bengal for* 1836-37 *and* 1837-38.

IMPORT TRADE.

| Countries. | 1836-37. | | 1837-38. | |
|---|---|---|---|---|
| | Value. | Per centage. | Value. | Per centage. |
| EUROPE. | £ | | £ | |
| United Kingdom, .. | 2,240,471 | 60·1 | 2,059,483 | 50·6 |
| France, .. .. .. .. | 156,739 | 4·2 | 155,585 | 3·8 |
| Denmark,.. .. .. | — | — | 3,993 | — |
| Sweden, .. .. .. .. | — | — | | 0·0 |
| Portugal, .. .. .. | | | | |
| Total Europe, | 2,397,210 | 64·3 | 2,219,062 | 54·5 |
| ASIA. | | | | |
| Coromandel Coast,.. | 89,736 | 0·4 | 126,909 | 3·1 |
| Ceylon, .. .. .. .. | 3,537 | 0·1 | 8,387 | 0·2 |
| Coast of Malabar, .. | 246,265 | 6·6 | 171,538 | 4·2 |
| Maldive and Laccadive Isles, .. .. .. | 15,591 | 0·4 | 13,259 | 3 |
| Arabian and Persian Gulfs, .. .. .. | 86,403 | 2·3 | 123,474 | 3·0 |
| China, .. .. .. .. | 339,003 | 9·0 | 673,404 | 16·6 |
| Singapore, .. .. | 173,051 | 5·0 | 292,659 | 7·2 |
| Penang and Malacca, | 68,541 | 1·8 | 99,279 | 2·4 |
| Java and Sumatra, | 11,885 | 0·3 | 8,156 | 0 2 |
| Manilla, .. .. .. | 12 | — | — | — |
| New Holland, .. | 2,292 | 0·06 | 6,144 | 0 2 |
| Pegu, .. .. .. .. | 139,527 | 3·7 | 142,667 | 3 5 |
| Total Asia, .. | 1,175,842 | 31·6 | 1,665,876 | 40·9 |
| AFRICA. | | | | |
| Mauritius, .. .. .. | 25,457 | 0·7 | 46,795 | 1·1 |
| Bourbon, .. .. .. | 10,505 | 0·3 | 13,405 | 0·3 |
| Cape of Good Hope, .. | 4,808 | 0·1 | 6,402 | 0·2 |
| Total Africa, .. | 40,769 | 1·1 | 66,602 | 1·6 |
| AMERICA. | | | | |
| North America, .. | 103,531 | 2·7 | 72,944 | 1·9 |
| South America, .. .. | 9,208 | 0·3 | 45,465 | 1·1 |
| Total America, | 112,739 | 3·2 | 118,410 | 3·0 |
| Grand Total, | 3,726,560 | 100 | 4,069,950 | 100 |

EXPORT TRADE.

| Countries. | 1836-37. | | 1837-38. | |
|---|---|---|---|---|
| | Value. | Per centage. | Value. | Per centage. |
| EUROPE. | £ | | £ | |
| United Kingdom, .. | 2,837,997 | 42·3 | 2,719,222 | 41·8 |
| France, .. .. .. .. | 284,258 | 4·2 | 221,806 | 3·4 |
| Denmark, .. .. .. | 200 | | | |
| Sweden, .. .. .. | — | — | 10,673 | 0·2 |
| Portugal, .. .. .. | | | | |
| Total Europe, | 3,122,455 | 46·5 | 2,951,701 | 45·4 |
| ASIA. | | | | |
| Coromandel Coast, .. | 177,131 | 2·7 | 115,439 | 1·8 |
| Ceylon, .. .. .. .. | 14,205 | 0·2 | 6,489 | 0 1 |
| Coast of Malabar, .. | 278,086 | 4·1 | 277,122 | 4 2 |
| Maldive and Laccadive Isles, .. .. .. | 5,969 | 0·1 | 4,733 | 0·07 |
| Arabian and Persian Gulfs, .. .. .. | 159,861 | 2·4 | 157,387 | 2 4 |
| China, .. .. .. .. | 1,889,478 | 28·2 | 2,054,378 | 31·6 |
| Singapore, .. .. | 278,052 | 4·1 | 317,581 | 4·9 |
| Penang and Malacca | 48,416 | 0·8 | 65,230 | 1·0 |
| Java and Sumatra, | 24,515 | 0·4 | 14,715 | 0·2 |
| Manilla, .. .. .. .. | 58 | | | |
| New Holland, .. .. | 19,624 | 0·3 | 38,715 | 0·6 |
| Pegu, .. .. .. .. | 141,578 | 2·1 | 144,697 | 2·2 |
| Total Asia, .. | 3,036,974 | 45·4 | 3,196,487 | 49·07 |
| AFRICA. | | | | |
| Mauritius, .. .. .. | 138,399 | 2·0 | 154,905 | 2·4 |
| Bourbon, .. .. .. | 40,835 | 0·6 | 55,670 | 0·8 |
| Cape of Good Hope, . | 11.344 | 0·2 | 23,078 | 0·3 |
| Total Africa, | 190,577 | 2·8 | 233,652 | 3·5 |
| AMERICA. | | | | |
| North America, .. | 349,890 | 5·2 | 120.757 | 2·0 |
| South America, .. .. | 7,844 | 0·1 | 2,019 | 0·03 |
| Total America, | 357.735 | 5·3 | 122,756 | 2·03 |
| Grand Total, | 6,707,741 | 100 | 6,504,596 | 100 |

*Internal Transit Duties.*—A very great improvement has recently been effected in the domestic economy of our Indian empire, by the abolition of the duties on the transit of goods from one part of the country to another. These duties have existed in India from a very remote period; and, by obstructing the intercourse between its different districts, were singularly pernicious.

CALENDAR, (*a.*) or the division of time into years, months, weeks, and days. It is said, in the account of the creation, that the heavenly bodies were intended to measure times, seasons, days and years. In most cases, they do furnish us with the measures by which we go. The earth's revolution on its axis furnishes the measure of a day. A week is measured by the quarterly changes of the moon; the measure of a month is suggested by the time which it takes the moon to go through its circle of changes; a year is measured by the earth's revolution in its orbit round the sun.

There are some divisions of time now in use, which are not measured by the heavenly bodies; such are the subdivisions of the day into minutes and hours. To begin with the minutes. It is evident that such a division could not have been in use in very ancient times, because there was nothing to measure it. There was no timepiece invented; the only thing of the kind known was the dial; but so far from measuring minutes, that invention could not measure hours; the hours measured by sun-dials were not of fixed length, but proportioned to the length of the day. The dial of ancient times must have been a very imperfect thing. Herodotus gives us to understand that the Chaldeans were the inventors, and it was doubtless from their country, that the memorable dial of Ahaz, mentioned in scripture, was brought. But so slowly was the invention improved, that at the time of the first Punic war, a dial was brought to Rome, and set up in the forum, which was made for a different latitude; and no one in the city seems to have known any good reason, why it should not keep as good time in that latitude, as in the one for which it was made. They easily discovered that it was of no use to them; but what was the matter with it, or how to mend it, no one was able to tell.

The clepsydra or water-clock was a later invention, and might have answered the purpose, if the ancients had known the laws that govern the motions of fluids. The hour was measured very much as it is in the hour-glass, by the time which it took a given quantity of water to drop from the upper glass into the one below. But, unluckily, they did not know that when there was much water it would run out faster than when there was little, so that, though it would serve like the hour-glass to measure a single hour, it could not measure equal successive hours, nor could it measure the parts of a a single hour. The Persian clepsydra was different; a small metallic cup perforated at the bottom was placed on the surface of a larger vessel of water, where it filled gradually and sunk at the expiration of the hour. The only important use to which these water-clocks were applied, was to determine the length of pleadings in court houses. To prevent the advocate from speaking too long, he was allowed so much time, measured by the water-clock, and if he could not get through his argument in the time assigned, so much the worse for his client. In puritanical times preachers kept an hour-glass on the pulpit cushion, for the same purpose, but they by no means regarded the hint which it gave them.

As for clocks, they are entirely modern;—they are inventions of the monks of the middle ages. When we read of clocks, however, in early times, we must not think of any thing finished like our time pieces; they were probably such as the wooden clock of a pedlar might have looked down upon with disdain. These things show, that in extreme antiquity, they could not be acquainted with minutes, for want of something to measure them. When they spoke of a moment, they called it the twinkling of an eye, or glance of an eye; but this, of course, was no measure of time.

Passing then to the hours; we are not to suppose, when we see the word *hour* in ancient writings, that it had the same meaning then which it has now. In the writings of Moses, it means simply the time when any thing happened or was to happen,—as in the expression of our Saviour, "My hour is not yet come." In Homer and Hesiod the *hours* were the seasons of the year. In mythology, the hours were considered as goddesses who presided over the seasons of the year. In the book of Daniel, the word hour is used, but it seems to mean a moment, and not an extended portion of time: nor do we know of any passage in the Old Testament, where the word is used to denote any measured portion of a day. In the Apocryphal writings there are some; but those, compared with the books of the Old Testament, are quite modern writings.

How then, were the day and night divided? for there must have been some divisions, to answer the purposes of life. They had some, which answered their purpose in a general way. The night, in the Old Testament times, was divided into three equal parts, called the first watch, the second or

middle watch, and the third or morning watch of the night. In the New Testament, the order is different, because then, the Jews had adopted in this, as in many other things, the practice of the Romans. They then divided the night into four watches,—sometimes called by number, first, second, third and fourth, sometimes by name, evening, night, cock-crowing and morning. These were names often applied to the whole watch, though they properly designated only the times when each watch began. These must have been loose and arbitrary divisions; thus they could not tell when it was midnight, if it was cloudy; they only knew it by observing the ascension of a star. Cock-crowing, too, depended entirely upon the discretion of the poultry. When our Saviour tells Peter that he will deny him before the cock crows, he means to say that he will do it very soon. The Paschal supper was not eaten till it was dark,—much time was taken up with its forms;—after it was over, he walked with his disciples out from the city to the mountain,—and this walk must have taken considerable time, judging from the instructions, preserved by St John, which Jesus gave them upon the way. It must have been about midnight when he was arrested, and it was not half way from midnight to sunrise before the apostle denied him. Never was such a world of intensely interesting history, crowded into a few short hours.

The day was like the night, divided into four equal parts, in very ancient times, loosely called the morning, the heat of the day, the midday and the evening: this division was in use in our Saviour's time, though they had then begun to divide the day into what were called the Babylonian hours. This earlier division is referred to in the law; the Paschal lamb must be slain between the two evenings; an expression which would be perplexing, if we did not know that the evening began at the middle of the afternoon, and the name evening was also given to the time when the sun had gone down; so that the command was to kill it at the latter part of the afternoon.

The Babylonian hours, which were in use in our Saviour's time, were invented by the Chaldeans, who took the lead in astronomical discoveries and calculations. The day, between sunrise and sunset was divided into twelve equal parts: these, of course, were not of fixed length, but were longer or shorter, according to the length of the day. At the time of the equinox, when the sun rose and set at six, they would have been just equal to ours,—sixty minutes long; but if the sun should have risen at four and set at eight, the hours would have been as much longer in proportion as the day was longer,—they would have been eighty minutes long. In Palestine, however, the sun never rose earlier than five, nor later than seven. The third hour was the hour of morning prayer; if the sun rose at six, this would be at nine o'clock; but if it rose at five it would be at eight o'clock; and the time of evening prayer was also at the middle of the afternoon; the sixth hour, which was noon, never changed: but all other times varied with the length of the day. We read in the scripture of those who went up to the temple at the third hour to pray,—this being the time of public prayer; and our Saviour sat at the well of Sychar at the sixth hour, which was the meridian heat of the day. The one who came into the vineyard in the eleventh hour, came but just before sunset,—the time when every one was required by the law to pay those who had been employed in his service that day. This division of the day into hours had its inconveniences, which are too obvious to be mentioned. They were doubtless felt;—but what was to be done? It is clear, as was just now mentioned in the case of minutes, that without timepieces, which they had not, hours of fixed and equal length could not possibly be measured by man.

The Jews did not follow the Chaldeans in their time of beginning the day; and this brings us to the divisions of time into days. These, in most latitudes, are measured sufficiently well for common purposes, by the earth's revolution on its axis, which exposes all parts of its surface in succession to the light of the sun. In high northern latitudes, however, this would not answer; the hours of a day which last six months, might hang heavy on their hands; and a night of equal length would be somewhat too long to spend in sleep, if they had any idea of ever waking. Even now, though any one would suppose that this portion of time was exactly measured by the heavens, we have in use three different kinds of day. The natural day is the time between sunrise and sunset.—The civil day, that which is observed in all legal transactions, begins at midnight,—thus the Sabbath is regarded as beginning at twelve on Saturday night, and all legal movements are suspended till the next night at twelve. Then there is the astronomical day,—that which is used by astronomers and navigators,—it begins at noon, because that time can best be determined by observations,—and the hours are counted from one to twenty-four. The day, with the Jews, began at sunset; thus the Sabbath began at sunset on Friday evening. Friday was called the preparation for their Sabbath, because as nothing could be done on the Sabbath, all preparations were necessarily made on the day before. A calm, perfect and profound, prevailed in every habitation, from the moment when the sun went down; then, according to the beautiful ceremony of their religion, the Sabbath lamp was lighted in every dwelling, and burned till the next day's close.

In practical use, there is a slight perplexity attending the subject of time as measured by the sun. The days as measured by the sun are not equal throughout the year: this is because the earth has two motions,—while it turns on its axis, it moves also in its orbit round the sun. While it is turning once on its axis, it advances about one degree in its orbit: it must therefore turn so much more on its axis, before the sun can be at the meridian again. But the younger part of our readers will understand this better by an illustration; let a lamp represent the sun; now if any one turns round on the place where he stands, when he has turned exactly round, he shall be exactly facing it again. But suppose that when he is turning, he is at the same time moving to the right: in that case, when he has turned quite round, he will not be facing it; he must turn more before he will face it;—now the time of meridian is the time when the place on the earth where we are, is exactly facing the sun,—and owing to this motion in its orbit, the earth must sometimes turn more than quite round, and at others less than quite round, to bring us facing to the sun. But it always turns quite round in exactly twenty-four hours;—if it must turn more than quite round, it will take more than twenty-four hours,—if not quite round, it will take less than twenty-four hours;—and, accordingly, we

find that the days, as measured by the meridian, are sometimes about a quarter of an hour longer, sometimes as much less than twenty-four hours.

Now if we measure time by the meridian,—if we take it to be twelve when it is noon according to the sun, it is evident that we must alter our clocks every day. This will not do;—and the course which men have adopted, is the old-fashioned way of splitting the difference between the longer and shorter days, and going by a clock which measures equal days throughout the year. The clock gives the average length of the hours,—mean time, as it is generally called. Four times in the year it will be twelve by the clock and by the meridian, at the same instant: but on every other day, the clock will differ from the sun.

Of the week there is not much to be said. It was doubtless suggested by the time which it takes the moon to pass through one of her quarterly changes, though not exactly. In the Scripture, the word applies not merely to days but to years, —thus Laban says to Jacob, "fulfil her week,"— meaning the seven years' term of service by which Jacob was to earn the hand of his daughter. So Daniel, in the celebrated prophecy of the seventy weeks, meant weeks of years, and was easily understood by the Jews.

This division of time has been in use from very early ages; and it is a little singular that the days of the week have been named from the heavenly bodies by the ancient Chinese, Hindoos and Egyptians, as they were named by the moderns,—as we name them now. Sunday, as is well known, is named from the sun, as Saturday is from Saturn,— it being Saturn's day. Monday is so called from the moon; the others retain the names to this day, which were given them by our Saxon fathers. Tuesday is so called from the Saxon name of the planet Mars; Wednesday, from the Saxon name of Mercury; Thursday, from the Saxon Jupiter, and Friday from the Saxon Venus. This shows how generally the heavenly bodies are regarded as presiding over the measures of time.

There is one singular form of expression in scripture which requires more attention than it has received;—we will show what we mean by an example. It is said the disciples met after eight days, meaning a week after our Saviour's resurrection; we should say after seven days; but if the time mentioned took in the least portion of a day, they considered it as taking in the whole. Thus our Saviour is said to have been in the grave three days and three nights: according to our calculation, it was not so;—for he died late on Friday afternoon, and rose early on Sunday morning: but according to the Jewish calculation, the statement was exact; for though he was not forty-eight hours in the grave, he was still in it a part of three days, —that is, Friday, Saturday and Sunday. The law required that infants should be circumcised when they were eight days old,—and still it was done on the eighth day, when, according to our calculation they were but seven days old. By them, the day of the birth, however little of it remained, was called the first day, and the day of circumcision, however little of it was spent, was reckoned the eighth day. This must be understood in the explanation of Herod's massacre. It is said that he slew them from two years old and under,—and it is often asked, why he should have made such a needless slaughter, to include a child but lately born, and why do not historians mention such a wide work of blood. But look at the peculiar calculation of the Jews. Suppose that our Saviour was born on the twenty-fifth of December, he would have been called one year old when that year closed, and on the first of January he would have been called two years old, because he had already seen a part of two years. This is a fact, however strangely it sounds. So that those born a very little time before Herod's murder, supposing a new year to have begun since they were born, would have been described as two years old; and those born on or after the new years's day, would have been included in the phrase "and under,"— "under," according to the time which he inquired of the wise men. Vile as he was, he did not probably wish to murder more than were necessary to secure the death of the lineal heir to the Jewish throne.

The greatest importance of this division of time into weeks, arises from its furnishing us with the Christian Sabbath; the Jewish Sabbath was on the seventh day of the week,—as the earliest Christians were Jews, they of course observed the day set apart by the Hebrew faith, and also another day, the first of the week, in remembrance of the resurrection of their Master. Jesus Christ taught his disciples, to respect the institutions of their former religion;—they did not therefore take the seventh day for their celebration, possibly, because it was already sanctified to a different sacred purpose; but there was no such objection to the first, which was also recommended to them by its being the day when the Saviour left the dead. How important this celebration is to religion, has been sometimes acknowledged by its enemies. The French revolutionists, when they wished to abolish Christianity, saw that it could not be done while the Sabbath was regarded. They therefore undertook to alter the calendar, dividing the year into twelve months of thirty days each, and every month into three decades, or weeks of ten days each. This was made the civil reckoning by law, so that the Sabbath was no longer observed. But twelve years could not make the people forget the Sabbath, nor was the new computation of time acceptable,—and when Napoleon came to the head of affairs, he abolished the new practice, and enacted that the week should be reckoned as in other civilized lands. And the reason why they could not make men forget the Sabbath, was, that the Sabbath was made for man; the nature of man requires a day of rest, and God has ordained what proportion of time is needed for the purpose. One seventh portion of time is the amount set apart for the purpose, and the experience of man has abundantly shown that the estimate is just. There is no doubt on the mind of any one, who is capable of judging, that men are better in every respect with it, than they could be without it, both as respects this world and the other. As respects this world, there is more work done, and far better done,—there is more prudence, thrift and prosperity of every kind than there could be, if the Sabbath were like any other day; and as for morality, and religious feeling, without the Sabbath, they would soon be lost. One thing is evident;—it is that none need the Sabbath, so much as those who violate it, and those who would make it like any other day.

The division of the year into months, is suggested by the changes of the moon. For the moon to pass through her regular circle of changes, crescent,

full and waning, requires about twenty-nine days and a half. These changes of the moon are so obvious and striking, that it was very natural to employ the circle of changes or lunation, as it is called, for one of the larger measures of time. Still, it has always occasioned much perplexity, arising from the fact, that a month measured by the moon, is not so long by a day, as a month measured by the sun. A month according to the sun, is the time which it takes the sun to pass through one of the signs of the zodiac, which is thirty days and a half nearly,—or to be accurate, is exactly one twelfth part of three hundred and sixty-five days five hours and forty-nine minutes, which is the length of the mean solar year. Twelve months therefore, according to the moon, do not equal twelve months according to the sun, and of course do not make out an entire year.

The earliest months mentioned in the scriptures consisted of thirty days, all except the twelfth, which was made to consist of thirty-five days, in order to fill out the entire year. We say the twelfth, because the months were then numbered, and not known by names as they are now. But all this was afterwards altered. They gave names to the months, and measured them by the moon, while the year was necessarily measured by the earth's revolution round the sun. These lunar months consisted of twenty-nine days and a half,—or rather in order to avoid the inconvenience of fractions, one month consisted of twenty-nine days, the next of thirty, and so on throughout the year. The new moon was the beginning of the month; the new moon determined the time of their celebrations, so that exactness in the time was of importance in a civil and religious point of view. They did not, however, probably from want of astronomical knowledge, go by the time when the moon is in conjunction with the sun; but by the time when it is first visible in the sky. The first appearance of the crescent was narrowly observed; if the sky was cloudy, the time was determined by authority in the temple; at night, beacon fires were kindled on the mount of Olives: this fire was immediately answered from the surrounding heights, where men were stationed on the watch; the signals rapidly spread, and in a few moments, all the hills in Judea were in a blaze. In Jerusalem, all the trumpets of the temple summoned the people to rejoice, and to celebrate the festival of the new moon. How much was thought of the season of the new moon, no reader of scripture will need to be informed.

But, as we have said, twelve of these lunar months do not make out the year. And here let me call your attention to the arrangement made by Moses, who was fully aware of the difficulty which would arise from thus measuring time by the moon. The difficulty may be explained in this way. Twelve lunar months make about three hundred and fifty-four days, while the year consists of three hundred and sixty-five;—the lunar year therefore is eleven days less than the true year. Now, suppose that the passover should come one year on the twenty-first of March; according to the moon, the anniversary would come the next year on the tenth of March; the year after it would go back into February,—in a few years the passover would come in January,—and thus we see, that, going by the moon, the festivals would go farther and farther back, till they travelled throughout the year. The difficulty was also felt in matters of common life. Suppose that a man had hired and paid for a field for three years; according to this rule he would lose his third crop, the harvest being in the spring; since the end of the third year would be thirty-three days earlier than the first, it would come in February, when the grain was not ripe, and as that third harvest was not ripe till the beginning of the fourth year, he must lose it, he having hired the field for but three.

Now, with their small amount of astronomical knowledge, the only remedy they could devise for this difficulty, was to add a thirteenth month to the third year, and Moses so arranged it, that this must be done. Some may say, why did he not tell them at once to go by the sun, which would have saved all this trouble? This, however, would be like the suggestion of a certain princess, who was told that the poor were dying for want of bread: Astonishing! said she, why don't they eat pastry? The reason was, that they could not get it,—and the reason why Moses did not go by the sun, was, that nobody knew the exact length of the solar year. His only remedy was to add this thirteenth month when it became necessary, and the way in which he did it, shows his far-sighted wisdom. Instead of leaving it to the discretion of the priests to add it when it became necessary, he provided that it should of necessity be done. The first moon of the year, answering nearly to our April, was the harvest moon of Palestine. Moses called it the ear-moon, and required that on the sixteenth day of it, at the time of full moon, ripe ears of barley should be offered as first fruits to God. By reason of the lunar year being only three hundred and fifty-four days, this full moon would come eleven days earlier next year, and twenty-two days earlier the year after; and then, evidently, the harvest would not be ripe, so that the offering could not be made. When this was the case, they were not to call that moon the first of a new year: it was to be considered as the thirteenth month of the old year; they were to wait for the next moon, when the harvest would be ripe, and that was to be regarded as the ear-moon and first of a new year. The great advantage of this arraugement was, that there was no need of going to astronomers to know when this odd month must be added; every husbandman could tell whether the harvest would be ripe or not, by the middle of the moon; and if not, he needed no public authority to tell him that that moon was the thirteenth of the old year, and not the first of the new. Where there is no such arrangement, there is perpetual confusion. In Turkey, at the present day, where they go by the moon without adding such a month, the festivals travel back every anniversary till they go quite through the year.

Some ancient nations, being aware of this difficulty, made attempts to measure the year by the sun: but they fell on this very stumbling block,—ignorance of the exact length of the solar year. They called it three hundred and sixty-five days; which was not correct, for the true year is about six hours longer, which in four years would amount to a day. The Egyptians are an example. They went by the heliacal rising of the dog-star,—that is, the time when, after having been so near the sun as to be lost in its light, it first rises so much earlier than the sun that its light can be seen in the sky. They supposed that the dog-star, after having been thus lost in the light of the sun, would re-appear at precisely the same time every year.

But they found that the heliacal risings of this brilliant star; were advancing at the rate of a day in four years; which, in the course of a century, would make a serious derangement of dates and calculations. We do not know when the year was first known to be six hours more than three hundred and sixty-five days in length. Plato is said to have learned it from the Egyptians,—but if they knew it, they do not seem to have known how to apply their knowledge, so as to remedy the trouble which arose from the unequal length of the years. This shows the wisdom of Moses in supplying a practical remedy for a defect, which there was not science enough in the world to repair.

We think that even a child may be made to comprehend what this difficulty is. It made precisely the same difficulty in the year, which a clock going too fast would make in a day. But what would the person who had the management of such a clock, do with it? Probably, if he found it was an hour too fast, he would have the wit to put it back, and make it go through another hour before he would consider the given hour as come. This is just what Moses did: when he found that the passover was coming a month too soon, he put the calendar back, and made it go through another month, before he called it the beginning of the new year.

Attempts were made by some ancient nations, to divide the difference between the lunar and solar years: some of these attempts may be traced among the Egyptians. Thus, the lunar year being three hundred and fifty-four days, and the solar three hundred and sixty-five, they considered the year as consisting of three hundred and sixty days, —to make no mention of fractions. This luni-solar year was more than five days longer than the lunar year, and as much shorter than the year as measured by the sun. But this was too fast;—and if the new year came five days and a half earlier every year than in the last, the months must soon cease to correspond to the seasons, and in less than half a century, the winter months must change places with those of summer. Professor Playfair remarked, that this fact would explain a difficult passage in Herodotus; the historian said that, in the time of the ancient Egyptian kings, the sun had twice risen in the place where it had formerly set, and twice set where it had formerly risen. By this he supposes it was meant, that the sun had gone twice through all the signs of the ecliptic; and that the sun had risen and set twice in every day and month of the year. This was eagerly seized by those who are for discrediting the sacred history, to prove that the earth is much older than the account of Moses makes it: but all this might have happened in the short space of one hundred and thirty-eight years; since, in that period, there would be a difference of about two years between the lunar and solar year.

Without saying more of the perplexities of the ancients, we will now proceed to give some account of the first effectual attempt made to correct the calendar. It was done under the orders of Julius Cæsar,—by far the most accomplished and intellectual of the class of conquerors to which he belongs. His victories do no lasting honour to his name: but this enterprise secures him the everlasting gratitude of mankind. We do not mean to say that he did this by his own calculations: he called to his aid the best astronomers that the age afforded. Sosigenes is celebrated as the most eminent of this number; he saw in the outset, that nothing could be effected, without ascertaining, as nearly as possible, the length of the solar year. Accordingly, having ascertained, as he thought, that the earth revolved round the sun in three hundred and sixty-five days and six hours, he settled it as a principle, that the months must be so arranged as to fill up three hundred and sixty-five days and six hours, that being the length of the year, without regard to the moon.

The first thing to be done was, to bring back the equinox to its proper place in March; in order to do this, he *put the clock forward;* he made the year then passing go through two more months than usual,—because the festivals then came two months too soon. The year of fourteen months was called the year of confusion. But beside restoring the equinox to its place, it was necessary to provide for the extra six hours, and as these hours amounted to a day in every four years, he inserted a day in every fourth year, making three hundred and sixty-six, the same which we now call a leap year. This was done when Cæsar was appointed dictator and sovereign pontiff, about forty-five years before the coming of our Lord. This is substantially the same with the calendar now in use. It made the average length of the years three hundred and sixty-five days and a quarter, instead of three hundred and sixty-five days as they were before. The extra day was added in February, as it is now. He called it the bissextile; we call it the leap year.

But with all the pains bestowed at that time upon the calendar, it was not quite correct. Before the time of Cæsar, the year had been too short; he lengthened it by adding six hours; but this was leaning on the other side, and making it a little too long; for the true year wants eleven minutes and ten seconds of three hundred and sixty-five days and six hours. This, to be sure, is not much, and the error would occasion no inconvenience for many years. It amounted only to a day in one hundred and thirty years, and the calendar of Cæsar was in use more than fifteen hundred years before it was even detected. At length, in the time of Gregory XIII. a pope of the sixteenth century, it was ascertained by the festivals of the church, that there was some error in the computation of time. On looking into the subject, it was found that, whereas the calendar placed the vernal equinox on the 21st of March, it actually took place on the 10th, so that the seasons and festivals had gone ten days from the place which the calendar assigned them. The difficulty experienced by the church was this. Easter was to be celebrated on the first full moon after the spring equinox; the calendar placed the equinox on the 21st of March: it really took place on the 10th; now suppose the moon was full on the 20th, what day should they observe? The 20th was before the equinox by the calendar, and yet after it in reality; if they went by the calendar they must wait for the next full moon, and yet this on the 20th, being after the equinox, was the real anniversary of the Passover and of Easter. This was a serious thing to a church which attached so much importance to its anniversaries and celebrations.

But something must be done. And, whereas, on former occasions, they had been obliged to add some days to make out the year, or, as we should say, *to put the clock forward*, now they were obliged to put it back; that is, they were obliged to strike out some days to bring back the equinox to the 21st

of March, where it belonged. The Pope, accordingly, gave orders that ten days should be struck out in October, 1582; that the next day after the 4th, should be not the 5th, but the 15th,—a change which was immediately made in all Roman Catholic countries, though not without sore misgivings on the part of some of them, at seeing the head of the church cutting off so many days from the term of their natural lives. In Protestant countries, the new style, as it was called, was not readily adopted; it seemed like a simple and necessary reform: still, they thought that since it proceeded from the Catholics, it was a suspicious movement, and the less they had to do with it the better; they accordingly stood out against it in rejoicing ignorance, and with so much perseverance, that it was not till the middle of the last century, that Protestant countries generally adopted the Gregorian calendar.

In England, the new style was not adopted till 1752. As it was introduced by a pope for the express purpose of regulating the ecclesiastical year, and ascertaining the time for keeping the festivals celebrated in the Roman church, it was looked on with great suspicion by protestants. In Russia, and other countries where the Greek church prevails, the new style was not adopted till 1830. Dr Johnson gives an account of the sensation produced by the act of parliament for effecting the change. The young people were all delighted at the thought of killing so much time as eleven days, for it was necessary to strike out one day more than in 1582; they also thought that it would be a beautiful thing to have a year, which public authority ordained should be a year of confusion. But older people did not like the idea of having a year with such an ominous name: moreover, they did not see what right parliament had to strike out eleven days, as if Providence could not regulate that matter without their helping hand. The greatest outcry was made by certain ancient women, who said that their lives were full short enough without having eleven days struck off, and that to strike out a Sabbath from the year, seemed to them the most unrighteous thing that ever was done in a Christian country. The alteration was proposed in parliament by the earl of Chesterfield; but the earl of Macclesfield, then president of the Royal Society, a nobleman of much talent and science, was the real author of the measure, and bore a great part in the details of its execution.

The Pope, or rather the men of science whom, like Cæsar, he relied on in the whole movement, not only restored the seasons to their place, but provided against a recurrence of the difficulty. The method was ingenious and effectual. The excess was a day in one hundred and thirty years. He therefore ordained that in three centuries out of four, the last year should be a common year, and not a leap year. Thus, 1600 was a leap year, having three hundred and sixty-six days; but 1700, 1800, and 1900 are common years, having but three hundred and sixty-five. This arrangement disposes of one day in about one hundred and thirty years, and brings the calendar nearly to perfection. We say nearly, for though there is a slight variation, it will only amount to a day in three thousand years, and that need not give us much concern: it can be attended to as well in the year 4835. According to the Gregorian or new style, the year begins on the 1st of January. This was the time fixed by Cæsar for new year's day, because it is the time when the earth is nearest to the sun. But it was not generally regarded. Some have commenced the year on the 25th of December, the supposed anniversary of our Saviour's birth; others have commenced it on the 25th of March, and this was the time established by law in the reign of Henry VIII. and generally observed afterwards as new year's day, till the change of style in 1752. In the dates of events in history, there is some perplexity, unless we remember this fact. When the old style was in use, January was one of the last months of the old year, instead of being, as it is now, the first month of the new.

But we must not dismiss the subject, till we have said something of the still larger divisions of time, called epochs or eras, of which the Christian era, which computes the years from the birth of our Lord, is one. This is the only one with which we have much concern; but in speaking of this, we are obliged to say a few words of the cycles, or circles of years, which were in use before the years were reckoned from our Saviour's birth.

The first was the solar cycle, and it was formed in this way. Suppose the sun entered the sign Aquarius in January, on Wednesday the 21st, at one o'clock in the day. It will not again enter the same sign on the same day of the month, the same day of the week, and at the same hour of the day, in less than twenty-eight years; twenty-eight years, therefore, was called the cycle or circle, through which the sun must pass before he comes back to the place whence he started. In using this they said that such a year was the first, second, third, of the solar cycle; and so on to the twenty-eighth, when they began again. There was also a lunar cycle, which was thus formed. Suppose that the moon should be at the full on Wednesday, the 28th of January, at one o'clock in the day. It would not be full again on the same day of the month, the same day of the week, and at the same hour of the day, under nineteen years: this, therefore, was called the lunar cycle, which brings back the moon to the place whence she started. This was called the golden number, because it was found so valuable in ancient times, for regulating festivals which depended on the moon. There was another smaller cycle, called the Roman Indiction,—a period of fifteen years, which was in use only to determine the time for paying certain periodical taxes.

But these cycles were so short as to be inconvenient; in order to get a larger period, which might save the trouble of counting the years over and over again, these cycles were multiplied together, and the product was a cycle of 7980 years, which was called the Julian period. This is assumed to have had its commencement before the creation of the world, since there has been no time since, when the three cycles could have begun together.

There was no attempt made to reckon the years from the time of our Saviour's birth, till the year 527, when Dionysius Exiguus, a Roman abbot, suggested that this reverence ought to be paid to the Saviour of the world. He therefore began so to date the years, and assumed that the first year of the Christian era was the 4714th of the Julian period. There is no historical record by which the nativity can be precisely ascertained; he therefore decided what year it was by such indications as he could gather from comparing the sacred history with that of profane historians. But those were

times in which much less was known concerning these points than in the present age; and a mistake was then made in fixing the time of our Saviour's birth which has never since been corrected.

The manner in which this mistake was brought to light is a fine illustration of the advantages of science. Who would suppose that astronomy could have pointed out an error in chronology? and yet so it was. Dionysius fixed the 1st year of Christ in the 4714th of the Julian period. But Josephus mentions that during Herod's last illness there was a remarkable eclipse of the moon. On consulting astronomical tables, we are enabled to ascertain the date of that eclipse to the day and hour; we find that it took place in the 4710th year of the Julian period, on the 13th of March, three hours past midnight at Jerusalem. Now we know that our Saviour was born before Herod died; so that he must have been born at least four years earlier than that which was fixed upon as the first of the Christian era. He must have been born sometime before the death of Herod, since his parents took him into Egypt to save him from that tyrant's malice, and kept him there till Herod died. So that astronomy makes it perfectly clear that our Saviour was born at least four, possibly five years earlier than the time assigned by the nativity; and if the Christian era had been correctly determined, the year 1840 would be 1844, or possibly 1845. The reason why the mistake, though universally admitted, never has been corrected, is, that we cannot fix the precise year, in the first place, and in the second, the error has prevailed for 1200 years through the dates of all histories, so that much confusion would be made in chronology without any correspondent gain.

CALIFORNIA, (*a.*) The Indians of California may, without injustice, be classed lower in the scale of mankind even than the Esquimaux. Equally inanimate and filthy in habit, they do not possess that ingenuity and perseverance which their northern neighbours can boast; sullen and lazy, they only rouse themselves when pressed by want; and in the settlements of the missioniares, called missions, where the cravings of hunger and thirst are satisfied, coercion alone goads them on to labour.

The men are large but not muscular, nor of a manly apparance; their complexion is very dark, and their features partake of the negro cast; the hair is long, but not coarse. The women are also large, their limbs and features regular, but not handsome: they perform all the household work, and are quite slaves to the other sex. Both sexes tattoo, but without any regular design in the marks on the skin; they perforate the lobes of the ears, and wear in them pieces of wood four to six inches in length, ornamented with feathers; their head-dresses and waist-belts are also adorned with decorated wood and pieces of bone, teeth of animals, and mother-of-pearl. They use no pottery, or earthenware, but work baskets so close as to contain fluids. Bows and arrows are their only weapons;—they are of fir, and slightly made; but, to give toughness to the bow, which is about three feet in length, the back part of it is strengthened with a glutinous composition of deer-sinews. The arrows are about the same length, very slender, and armed at the points with small pieces of flint jagged at the edges.

The use of the *temiscal*, or vapour-bath, of which they are passionately fond, is peculiar to this part of America. It consists of a structure of mud, the floor of which is sunk from four to five feet below the surface of the earth, of a circular form, about fifteen or eighteen feet in diameter. Besides the entrance, which is provided with a short passage to check the too ready admission of the external air, there is a small orifice in the top to allow of the escape of the smoke from a fire kindled in the centre of the temiscal. Around this fire, and with their feet towards it, the Indians lie wrapped in their thick woollen blankets, and continue so till the whole frame is reduced to a nervous debility by excessive perspiration: in this state they quit their warm retreat, and plunge themselves into a stream of cold water, near which they are careful always to place their temiscal.

The Indians pay their adorations to an evil spirit, who is supposed to preside over every thing, and whose displeasure they wish to avert by worship. This spirit is believed to be supreme, and unassisted in his office by any inferior agents. They have a full conviction of a future existence, and expect to enjoy happiness after this life in some delightful island in the sky, which happiness, being measured by their present ideas, consists in sensual gratification. Immediately after the breath has left the body, the corpse is burned without removing it from the spot; and, as their huts are not of laborious structure, they share in the conflagration.

The number of petty tribes is almost countless; and, what is singular, almost every tribe speaks a language, or perhaps dialect, which is not understood by the rest. Some dialects have the harsh sound of the Esquimaux, the words generally terminating in *ak*, *ik*, *uk*; while others are soft and full of vowels. Their huts are formed of stakes driven into the ground, generally circular, and thatched with straw; facility of construction being desirable, on account of the tribes frequently changing their stations. From the vermin which abound in these rude dwellings, it becomes necessary to fire them occasionally. Although the country is overrun with horses, the Indians make no use of them.

CALNE; an ancient borough town in the county of Wilts, England. It consists principally of one long street, partially lighted but not paved. The houses are in general of stone, and well built. It is amply supplied with water, having, besides a number of springs, the Marlan, which a little farther on falls into the Avon, running through it. A branch of the Wilts and Berks canal passes through the town, which, uniting with the Kennet and Avon canal, and the latter with the Thames at Abingdon, affords an easy communication with London, Bristol, and the intermediate places; with all these advantages its manufactures, which were chiefly woollen and very extensive, have of late been considerably limited. The articles made are principally broad cloths, kerseymeres, and serges. The market-day is Tuesday.

Calne is famous as the place where the controversy was terminated between St Dunstan, then archbishop of Canterbury, on the part of the benedictine monks, and the secular friars. Calne has been much benefited by the marquess of Lansdowne, whose mansion is in the neighbourhood. Three miles to the east of the town is a remarkable figure of a horse cut in a chalk hill, 157 feet in length. The vicinity abounds in curious and beautiful fossils. Population in 1831, 4795.

CAMBRIDGE (*a.*) The university of Cambridge consists of seventeen colleges, each of which

is a body corporate, and bound by its own statutes; but they are all subject to the paramount laws of the university. Each college furnishes members both for the executive and legislative branches of the government. The legislative branch of the government consists of the two divisions of the senate, and a council called the Caput. The senate consists of all who are masters of arts, or doctors in either of the three faculties, divinity, civil law, or physic, having their names on the college boards, holding any office in the university, or being resident in the town of Cambridge. They generally number about two thousand. They are divided into two classes, called the regents and the non-regents. The regents, or members of the upper house, or white-hood house, as it is called from the members wearing hoods lined with white silk, are masters of arts of less than five years' standing, and doctors of less than two. The non-regent or lower house, called also the black-hood house, from the members wearing black silk hoods, includes all the rest. But doctors of more than two years' standing, and the public orator of the university, may vote in either house.

The council, called the caput, consists of the vice-chancellor, a doctor in each of the faculties, divinity, civil law, and physic, and two masters of arts to represent the regent and non-regent houses. The vice-chancellor is a member of the caput, by virtue of his office. The other members of this council are chosen as follows. The vice-chancellor and the two proctors nominate severally five persons; and out of these fifteen, the heads of colleges, doctors, and scrutators elect five, commonly honouring the vice-chancellor's list with the appointment. Every proposition of a university law, or grace, must be approved by the caput, every member having a negative voice, before it can be presented to the consideration of the two houses of the senate.

Meetings for the transaction of university business, called congregations, are held about once a fortnight, and a list of the days of such meetings is published by the vice-chancellor at the beginning of each term. The vice-chancellor may call the senate together for the despatch of extraordinary affairs, at other times, by causing a printed notice, specifying the business, to be hung up in the halls of the several colleges, three days before the time of assembly. Any number of the senate, not less than twenty-five, including the proper officers, constitute a quorum, and may proceed to business. Besides these meetings, there are others called statutable congregations, or days of assembly enjoined by the statutes, for the ordinary routine of university affairs, such as conferring degrees, electing officers, &c., for which no special notice is required. A congregation may also be held without three days' notice, provided forty members of the senate be present. Every member has a right to bring any proposition or grace before the senate, if it has been previously approved by the caput. When it has passed the caput, it is read in the non-regent house by one of the scrutators, and in the regent house by the senior proctor. It is read in like manner at the second congregation. If a *non placet* is put in by a member of the non-regent house, the vote is then taken. If the number of *non placets* equals or exceeds the number of *placets*, the grace is thrown out. If the *placets* are more than the *non placets*, it is carried up to the regent house, and there undergoes the same process. If it passes through both houses, it is considered a regular act of the senate, and if the subject be of a public nature, it becomes a statute. No degree is conferred without a grace, which passes through the process above described. A grace of this kind is called a *supplicat*. Those for bachelor of arts, honorary degrees, and masters of arts of king's college, require to be read at one congregation only.

The executive of the university consists of the following officers:

The chancellor. This officer is the head of the university, and has sole authority within the precincts, except in cases of mayhem and felony. He seals the diplomas and letters of degrees, &c., given by the university, defends its rights and privileges, convokes assemblies, and administers justice to the members under his jurisdiction.

The high steward, who has the power of trying scholars impeached of felony within the limits of the university, and to hold and keep a leet according to the established charter and custom. He appoints a deputy by letters patent, which are confirmed by a grace of the senate.

The vice-chancellor. This officer is elected annually by the senate, on the 4th of November, and, as his title indicates, has the power of the chancellor, in the government of the university, and the execution of the statutes, when the chancellor is absent. He is required, by an order made in 1587, to be the head of some college; and he acts as a magistrate for the university and county.

The commissary is an officer under the chancellor, and holds a court of record for all privileged persons and scholars under the degree of M.A. for the trial of causes by the civil and statute law, and by the custom of the university.

The public orator writes, reads, and records the letters to and from the body of the senate, and presents to all honorary degrees, with an appropriate speech.

The assessor is an officer specially appointed by grace of the senate, to assist the vice-chancellor *in causis forensibus et domesticis*.

The two proctors are peace officers, annually elected. They must be masters of arts, of at least two years' standing, and are regents by virtue of their office. Their duty is to watch over the discipline of all persons *in statu pupillari*, to search houses of ill fame, and take into custody loose and abandoned or supected women. They are also required to be present at all congregations of the senate, to stand in scrutiny with the chancellor or vice-chancellor, to take the suffrages of the house, both by word and writing, to read them and declare the assent or dissent accordingly, to read the graces in the regent house, to take secretly the assent or dissent, and openly to pronounce the same.

The librarian's duties are designated by his title. The registrary is required, either by himself or deputy, to attend all congregations, to direct the form of the graces to be propounded, and to enter them on the university records, when they have passed both houses. He also registers the seniority of such as proceed annually in any of the arts and faculties, according to the schedules furnished him by the proctors. The two taxors are masters of arts, and regents by virtue of their office. They regulate the markets, and examine the assize of bread, the lawfulness of weights and measures, and call the abuses thereof into the commissary's court. The scrutators are non-regents. Their duty is to attend all congregations, to read the graces in the

lower house, to take the votes secretly or openly, and to declare the assent or dissent of that house. The moderators are nominated by the proctors, and appointed by a grace of the senate. They superintend the exercises and disputations in philosophy, and the examinations for the degree of bachelor of arts, in the place of the proctors. The three esquire bedells are required to precede the vice-chancellor with silver maces, upon all public occasions and solemnities. They bring the doctors present in the regent house to open scrutiny, there to deliver their suffrages by word or writing; they receive the graces from the vice-chancellor and caput, and deliver them first to the scrutators in the lower houses, and, if they are granted, carry them to the proctors in the upper house. They attend the professors and respondents in the three faculties, from their colleges to the schools, and during the continuance of the several acts. They collect fines from the members of the university, and summon the members of the senate to the chancellor's court. The university printer, the library-keeper, the under library-keeper, and the school-keeper, are elected by the body at large; the yeoman bedell is appointed by letters patent under the hand and seal of chancellor; and the university marshal, in the same manner, by the vice-chancellor.

The university has two courts of law, the consistory court of the chancellor, and the consistory court of the commissary. The former is held by the chancellor, or in his absence, by the vice-chancellor, assisted by some of the heads of colleges, and one or more doctors of the civil law. All pleas and actions personal, as of debts, accounts, contracts, &c., or of any injury begun or grown within the limits of the university, and not concerning mayhem and felony, are heard and decided in this court, and the manner of the proceeding is according to the civil law. An appeal lies from this court to the senate. The latter is held by the commissary, acting by authority deputed to him under the seal of the chancellor. He takes knowledge and proceeds in all causes, as above, except that causes and suits to which the proctors or taxors, or any of them, or a master of arts, or any other of superior degree is a party, are reserved to the jurisdiction of the chancellor or vice-chancellor. The manner of proceeding is the same in this as in the other court; and the party aggrieved is allowed, by statute, an appeal to the chancellor's court, and from thence to the delegates, if the cause and grief of the party render such application necessary.

The two members sent by the university to parliament are chosen by the senate. The university counsel are appointed by grace of the senate, and the solicitor is appointed by the vice-chancellor. The syndics are members of the senate, chosen to transact all special affairs of the university. The professors have stipends allowed from various sources, from the university chest, from government, or from estates left for that purpose. The annual income of the university chest is about £16,000, and the annual expenditure about £12,000. The funds are under the management of the vice-chancellor, and the accounts are examined by three auditors, appointed annually by the senate. The terms of the university are three. The October or Michaelmas term begins on the 10th of October, and ends on the 16th of December; Lent, or January term, begins on the 13th of January, and ends on the Friday before Palm Sunday; Easter or midsummer term begins on the 11th day after Easter day, and ends on the Friday after commencement, which is always the first Tuesday in July.

The seventeen colleges of the university were founded by different individuals, all of whom enjoined, first, the cultivation of religion, and then of polite literature and the sciences. The statutes of some of the colleges require the fellows to be born in England, in particular counties, &c. The fellowships at Trinity, St John's, Sidney, Downing, Clare Hall, and Trinity Hall, are open to all competitors, and there is the following law with regard to all; "Whosoever hath one English parent, although he be born in another county, shall be esteemed as if born in that county to which his English parent belonged. But if both parents were English, he shall be reckoned of that county to which his father belonged." Stat. Acad. p. 268.

The orders in the different colleges are, 1. A head of a college or house, who is generally a doctor in divinity; excepting of Trinity hall, Caius college, and Downing college, where they may be doctors in civil law or physic. The head of King's college is styled Provost; of Queen's, President; all the rest, Master. 2. Fellows, generally doctors in divinity, civil law, or physic; bachelors in divinity; masters or bachelors of arts; a few bachelors in civil law or physic, as at Trinity hall and Caius college. The number of fellowships in the university is 408. 3. Noblemen graduates; doctors in the several faculties, bachelors in divinity, who have been masters of arts, and masters of arts, not on the foundation, but whose names are kept on the boards for the purpose of being members of the senate. 4. Graduates, neither members of the senate, nor *in statu pupillari*, are bachelors in divinity, denominated four-and-twenty men, or ten-year men, so called because persons admitted at any college, when twenty-four years of age and upwards, are allowed to take the degree of bachelor in divinity after their names have remained on the boards ten years. During the last two years they must reside in the university the greater part of three several terms, and perform the exercises required by the statutes. 5. Bachelors in civil law and physic, who sometimes keep their names on the boards till they become doctors. 6. Bachelors of arts, who are *in statu pupillari*, and pay for tuition, whether resident or not, and keep their names on the boards, for the purpose of becoming candidates for fellowships, or members of the senate. 7. Fellow commoners, generally younger sons of the nobility or young men of fortune, who have the privilege of dining at the fellow's table. 8. Pensioners and scholars. The number of scholarships and exhibitions in the University is upwards of 700. 9. Sizars, men of inferior fortune, who usually have their commons free, and receive various emoluments.

CAMSIN; a hot wind of Africa, which generally blows in Egypt for two or three days successively, but less violently during the night than the day. It only occurs in the period between the middle of April and the beginning of June, and hence its Arabic name, which signifies "the wind of fifty days."

"On my route from Suez to Cairo," says Rüppel, "I had an opportunity of observing a meteorological phenomenon of a very curious nature, which possibly may lead to some interesting results. In the year 1822, May 21st, being seven hours

distant from Cairo, and in the desert, we were overtaken by one of those violent winds from the south, about which many travellers have told us such wonderful and incredible stories. During the night there had been a light breeze from the north-east; but a short time after sun-rise it began to blow fresh from the S.S.E., and the wind gradually increased till it blew a violent storm. Clouds of dust filled the whole atmosphere, so that it was impossible to distinguish any object clearly as far off as fifty paces; even a camel could not be recognised at this distance. In the meantime, we heard all along the surface of the ground a kind of rustling or crackling sound, which I supposed to proceed from the rolling sand that was dashed about with such fury by the wind. Those parts of our bodies which were turned towards the wind were heated to an unusual degree, and we experienced a strange sensation of smarting, which might be compared with the pricking of fine needles. This was also accompanied by a peculiar kind of sound. At first I thought this smarting was occasioned by the small particles of sand being driven by the storm against the parts of the body that were exposed. In order to judge of the size of the particles, I attempted to catch some of them in a cap; but how great was my surprise when I found I could not succeed in securing a single specimen of these supposed little particles. This led me to conceive that the smarting sensation did not proceed from the small stones or the sand striking the body, but that it must be the effect of some invisible force, which I could only compare with a current of electric fluid. After forming this conjecture, I began to pay closer attention to the phenomena which surrounded me. I observed that the hair of all our party bristled up a little, and that the sensation of pricking was felt most in the extremities and joints, just as if a man were electrified on an insulated stool. To convince myself that the painful sensation did not proceed from small particles of stone or sand, I held a piece of paper stretched up against the wind, so that even the finest portion of dust must have been detected, either by the eye or the ear; yet nothing of the kind took place. The surface of the paper remained perfectly unmoved and free from noise. I stretched my arms out, and immediately the pricking pain in the ends of my fingers increased. This led me to conjecture that the violent wind, called in Egypt Camsin, is either attended by strong electrical phenomena, or else the electricity is caused by the motion of the dry sand of the desert. Hence we may account for the heavy masses of dust, formed of particles of sand, which, for several days, darken the cloudless sky. Perhaps we may also go so far as to conjecture that the Camsin may have destroyed caravans by its electrical properties, since some travellers assure us that caravans have occasionally perished in the desert; though I must remark that in all the regions I have travelled through, I never could hear the least account of such an occurrence. At all events, to suppose that such calamities have been caused by the sand overwhelming the caravans, is the most ludicrous idea that can be imagined."

CANADA. (*a.*) Lower Canada is comprised within the parallels of 45° and 52° N. lat., and the meridians of 57° 50′ to 80° 6′. W. of Greenwich; embracing, so far as its boundaries will admit of estimation, an area of 205,863 square miles, *including* a superficies of 3,200 miles, covered by the numerous lakes and rivers of the province, and *excluding* the surface occupied by the St Lawrence river and part of the gulf, which cover 52,000 square miles; the entire province, land and water, being about a quarter of a million square miles, or 160,000,000 of acres.

Upper Canada is comprised within the parallels of 41° to 49° N., and the meridians of 74° to 117° W. of Greenwich, embracing an area of about 100,000 square miles, or 64,000,000 of acres.

The province of *Lower Canada* is divided into three chief districts—Quebec, Montreal, and Three Rivers; and two inferior districts—Gaspé and St Francis. These districts are subdivided as under:—

| | Counties. | Signiories. | Fiefs. | Townships. |
|---|---|---|---|---|
| Quebec district | 13 | 79 | 12 | 38 |
| Montreal — | 19 | 70 | 6 | 59 |
| Three Rivers district | 6 | 25 | 9 | 53 |
| Gaspe — | 2 | 1 | 6 | 10 |
| | 40 | 175 | 33 | 160 |

The inferior district of St Francis contains thirty-nine townships, which are included above with the townships of Montreal and Three Rivers. In this extent of country there are not less than sixty considerable rivers, besides many of smaller size, and upwards of seventy lakes, large and small.

*Upper Canada* has only been begun to be settled within comparatively recent years. It is nearly three times the size of England. Its superficies presents a much more level surface than that of Lower Canada—the features of the latter province, especially on the north, are those of the "mountain and the flood," on the most magnificent scale. The boundary-line between the United States and Upper Canada runs through the centre of the lakes, so that the navigation of those inland seas is divided between both.

The earliest European census of Lower Canada took place in 1622, when Quebec, then a small village, did not contain more than fifty persons. A general capitation took place in 1676, at which time there were 8415 inhabitants. The rapid increase of late years, is chiefly owing to emigration from Europe.

From 1760 to 1836 the population has doubled itself $3\frac{1}{4}$ times in Lower Canada. Taking the corrected census returns in 1825, and those of 1831, and the generally supposed population in December, 1836, the population of Lower Canada would appear to double itself in twenty-nine years only.

Quebec district contains thirteen counties, viz. Beauce, population, 11,900; area in square miles, 1007. Bellechasse, p. 13,529; sq. m. 1775. Dorchester, p. 11,946; sq. m. 348. Islet, p. 15,518; sq. m. 3044. Kamouraska, p. 14,557; sq. m. 4320. Lotbiniere, p. 9151; sq. m. 735. Magantic, p. 2283; sq. m. 1465. Montmorenci, p. 3743; sq. m. 7396. Orleans, p. 4349; sq. m. 69. Portneuf, p. 12,350; sq. m. 8640. Quebec, p. 36,173; sq. m. 14,240; Rimouski, p. 10,061; sq. m. 8840. Saguenay, p. 8385; sq. m. 75,090. Total pop. 151,985; sq. m. 127,949.

Montreal district contains nineteen counties, as follows:—Acadie, p. 11,419; sq. m. 250. Beauharnois, p. 16,857; sq. m. 717. Berthier, p. 20,225; sq. m. 8410. Chambly, p. 15,483; sq. m. 211. La Chenaye, p. 9461; sq. m. 299. La Prairie, p. 18,497; sq. m. 238. L'Assomption, p. 12,767; sq. m. 5008. Missisqui, p. 8801; sq. m. 360. Montreal, p. 43,773; sq. m. 197. Ottawa,

p. 4786; sq. m. 31,669. Richelieu, p. 16,149; sq. m. 373. Rouville, p. 18,115; sq. m. 429. St Hyacinthe, p. 15,366; sq. m. 477. Shefford, p. 5687; sq. m. 749. Terrebonne, p. 16,625; sq. m. 3169. Two Mountains, p. 20,905; sq. m. 1086. Vaudreuil, p. 13,111; sq. m. 330. Vercheres, p. 12,319; sq. m. 198. Stanstead, p. 10,306; sq. m. 632. Total pop. 290,050; sq. m. 54,082.

Three Rivers district contains six counties:—Champlain, p. 6991; sq. m. 783. Drummond, p. 3566; sq. m. 1674. Nicolet, p. 12,504; sq. m. 487. St Maurice, p. 16,909: sq. m. 9810. Sherbrooke, p. 7104; sq. m. 2786. Yamaska, p. 9496; sq. m. 283. Total pop. 56,570; sq. m. 15,823.

By the last census (1831) the population of Lower Canada is thus classified:—The number of proprietors of real property is given at 57,891, and the extent of land occupied by them at 3,981,793 statute acres. The number of persons living in 1831, who were deaf and dumb, is stated to have been 408, the blind 334, and the insane 924. The number of inhabitants professing the Roman Catholic faith, in 1831, is given at 403,472; the persons in connection with the Church of England were 34,620; those belonging to the Church of Scotland amounted to 15,069. There were only 107 Jews; the remainder of the population were Methodists, Baptists, Presbyterians, not in connection with the Church of Scotland, and other sects. The number of families employed in agriculture was 50,824, employing among them as farm servants only 7,602 persons. There were in the same year (1831) 2,503 families engaged in commercial pursuits, and 1,282 persons subsisting on alms. The number of inhabited houses is stated to have been 82,437—the number being built 1,458, and the vacant 1,542; making a total of 85,437.

The total seigneurial population of the counties, according to the census of 1831, was 385,237, and the total of the township population 52,695. The seven counties from Ottawa to Megantic, inclusive, either contain a majority or consist exclusively of population resident in townships. Gaspé and Bonaventure are inhabited by a very mixed population, chiefly engaged in the fisheries. In the rest of the counties the major part of the population is seigneurial. The inhabitants of the seigneuries may, for general purposes, be reckoned as French by origin; the inhabitants of the townships as English. The census of 1831 estimated the whole provincial population at 511,917, and stated the number of Roman Catholics to be 403,472, leaving, therefore, 108,445 to be Protestants, none of whom could be of French origin. Of the Catholics, it is reasonably estimated that 50,000 are of British origin, and the statement must therefore be satisfactory that in 1831 the total number of inhabitants of British origin was 158,000, whilst that of French origin was 353,000.

The Upper Canadians are a different people from the French *habitans* of the Lower province, the former being of British (and in a few instances, of American) birth or descent. The earliest European settlers in Upper Canada were some French families, who settled near the banks of the Detroit and on the St Lawrence, previous to the British acquisition of the province; after which period, the settlements of Europeans, or of loyal inhabitants from the United States, began to be encouraged. In 1806 the population was estimated at 70,718, in 1811 at 77,000; but the war with the United States tended much to check the prosperity, and with it the increase of population in the province. According to some returns the number of males and females stood in the following years thus—1821, m. 65,792, f. 56,795—total, 122,587; 1828, m. 99,465, f. 89,093—total, 188,558; 1830, m. 151,081, f. 100,386—total, 251,467.

Happily, however, some more complete documents than the foregoing are in existence, which are the only returns furnished by the Colonial office, to the statistical department of the board of trade.

*The Population of Upper Canada, deduced from the returns to the House of Assembly.*

| Districts. | 1823. | 1827. | 1830. | 1833. | Increase in 10 years. |
|---|---|---|---|---|---|
| Eastern - - | 14879 | 18368 | 21168 | 22286 | 7407 |
| Ottawa - - | 2560 | 3133 | 4456 | 6348 | 3788 |
| Johnston - - | 14741 | 16719 | 21961 | 27058 | 17317 |
| Bathurst - | 10121 | 12207 | 20212 | 22286 | 12065 |
| Midland - - | 27695 | 30000 | 36322 | 42294 | 14599 |
| Newcastle - | 9292 | 12283 | 16498 | 25560 | 16268 |
| Home - - - | 16609 | 21295 | 32871 | 47650 | 38853 |
| Gore - - | 13157 | 15483 | 23552 | 31820 | 18677 |
| Niagara - - | 17552 | 19500 | 21974 | 24772 | 7220 |
| London - - | 17539 | 18912 | 26180 | 33225 | 21374 |
| Western - - | 6952 | 7956 | 9970 | 11788 | 4836 |
| Total | 151097 | 176059 | 234865 | 296544 | 145447 |

*Rate of Increase in the general Population of Upper Canada, from the year 1824 to 1836, inclusive*

| Date. | Population. | Increase. | Date. | Population. | Increase. |
|---|---|---|---|---|---|
| 1824 | 149301 | | 1831 | 234681 | 23314 |
| 1825 | 156836 | 7535 | 1832 | 260994 | 26311 |
| 1826 | 164703 | 7815 | 1833 | 296870 | 35878 |
| 1827 | 175128 | 10429 | 1834 | 320735 | 23835 |
| 1828 | 186345 | 11217 | 1835 | 346165 | 25430 |
| 1829 | 196704 | 10359 | 1836 | 375000 | 28835 |
| 1830 | 211569 | 14863 | | | |

| | | |
|---|---|---|
| Average increase from 1824 to 1828 per. an. | | 9261 |
| — — — | 1828 to 1832 — | 18661 |
| — — — | 1832 to 1836 — | 28212 |
| Gen. aver. increase | 1824 to 1836 — | 18715 |

The foregoing is exclusive of the Indian population, whose numbers, though fast diminishing, amount, according to some estimates, to 28,000.

Quebec and Montreal are the shipping ports of *Upper* as well as *Lower* Canada.

The following is a statement of the number of vessels cleared out at Quebec for the following ports in 1833, 1834, 1835:

| | | London. | | Liverpool. | |
|---|---|---|---|---|---|
| | | Ships. | Tons. | Ships. | Tons. |
| 1833 | Oct. 25 | 109 | 38,868 | 94 | 30,168 |
| 1834 | — 31 | 111 | 37,723 | 113 | 40,254 |
| 1835 | — 26 | 95 | 32,134 | 140 | 52,184 |
| Loading | — | 21 | 6,989 | 21 | 8,474 |

| | | Clyde. | | Cork. | | Dublin. | |
|---|---|---|---|---|---|---|---|
| | | Ships. | Tons. | Ships. | Tons. | Ships. | Tons. |
| 1833 | Oct. 25 | 43 | 17,263 | 35 | 10,767 | 51 | 10,237 |
| 1834 | — 31 | 38 | 17,000 | 42 | 12,423 | 41 | 10,382 |
| 1835 | — 26 | 45 | 20,622 | 19 | 6,270 | 24 | 6,070 |
| Loading | — | 9 | 4,092 | 7 | 2,265 | 3 | 777 |

| | | Belfast. | | Hull. | | Sunderland. | |
|---|---|---|---|---|---|---|---|
| | | Ships. | Tons. | Ships. | Tons. | Ships. | Tons. |
| 1833 | Oct. 25 | 31 | 8,424 | 21 | 7,761 | 23 | 5,795 |
| 1834 | — 31 | 44 | 12,211 | 34 | 12,363 | 20 | 4,924 |
| 1835 | — 26 | 39 | 11,496 | 34 | 11,738 | 15 | 3,933 |
| Loading | — | 3 | 943 | 6 | 1,918 | 7 | 1,831 |

The following enumeration of the articles (in quantities) exported from Quebec by sea, in the year ending 5th January, 1834, will indicate the staple produce of the colony.

*Quebec.* Ashes. pot, 7579 brls. Do. pearl, 5175 do. Apples, 388 do. Beef, 3909 do. Ditto, half-barrels, 484. Beef, round, and Tongues, 18,887 lbs. Butter, 26,936 do. Biscuit, 2380 cwts. Flour, 59,651 brls. Fish: Alewives, do. 657. Cod, 5617 cwts. Herrings and Mackarel, 575 brls. Ditto, 175 boxes. Shad, 118 brls. Salmon, 161

tierces. Do., 59 brls. Do., 23 half-brls. Grain: Wheat, 106,301 minots. Indian meal, 476 brls. Oats, or Rye, 429 do. Flaxseed, 1345 min. Oats, 6185 do. Do., 1882 bags. Pease, 1748 min. Hams and Sausages, 43 kegs. Do., 10,884 lbs. Lard, 13,020 do. Pork, 10,118 brls. Do., 399 half-brls. Timber: Ash, 1394 tons. Birch and Maple, 486 do. Elm, 11,528 do. Oak, 26,125 do. Pine, 188,778 do. Broad planks, 4804 do. Battens, 89,478 pieces. Billets, 174 do. Deals, 2,083,302 do. Deal-ends, 69,865 do. Masts and Bowsprits, 776 do. Spars, 3104 do. Knees, 230 do. Oars, 17,973 do. Hoops, 77,990 do. Treenails, 23,756 do. Shingles, 37,100 do. Lathwood, 1946 cords. Staves, side and heading, 752,500 pieces Do., Pipe and Puncheon, 2,939,049 do. Do., Barrel, 848,819 do. Deal ends, 4574 do. Do., 6426 packs. Handspikes, 13,028 no. Tobacco-leaf, 5890 lbs. Furs: Beaver, 5490 skins. Bear and Cub, 264 do. Fox, 684 do. Fisher, 47 do. Lanx, 385 do. Minx, 530 do. Martin, 4536 do. Musk-rat, 16,848 do. Otter, 729 do. Racoons, 4 do. Wolverine, 16 do. Castorum, 169 lbs. Seal skins., 30 packs. Buffalo, 31 skins.

The maritime exports for the same year (1834,) from Montreal, which first became a port of entry in 1831, were as follows:

*Montreal.* Ashes, Pot, Canada, 14,091 brls. Ditto, United States, 1334 do. Do., Pearl, Canada, 4436 do. Do., United States, 3740 do. Apples, 107 do. Biscuits, 335 do. Bones, 2000 pieces. Butter, 103 kegs. Candles, 100 boxes. Castorum, 260 lbs. Furs and Skins: Beaver, 3811 no. Bears and Cubs, 537 do. Fishers, 249 do. Fox, 751 do. Lynx, 187 do. Martin, 8322 do. Minx, 2016 do. Musk-rat, 49,538 do. Otter, 1871 do. Racoon, 130 do. Flour, 32,218 brls. Grain: Wheat, 547,357 minots. Pease, 186 do. Hides, raw, 2510 no. Beef, 1441 brls. Pork, 1266 do. Oil Cake, 48,000 lbs. Oars, ash, 1899 no. Staves, W. I. 218,433 do. Do., Standard, 98,671 do. Do., barrel, 15,644 do. Do., Foreign 7197 do. Timber: ash, 123 tons. Birch, 7 do. do. Basswood, 3 do. Elm, 203 do. Oak, 719 do. Pine, 1092 do. Boards, 28,171 pieces. Deals, 64,788 do. Deal-ends, 5853 do. Planks, 782. Handspikes, 6020. Soap, 110 boxes. Tobacco-leaf, 14,000 bs.

Value of the exports from Quebec and Montreal, in the year 1836; and also the corn entered at Quebec:—

Exports to Great Britain, £620,087; Ireland, £143,893; B. N. A. Colonies, £159,413; B. W. Indies, £38,886; Oporto, £1222; Jersey, £220; United States, £1,913: total, £965,635. Value of exports from Montreal, in 1836, £249,674; Barley entered at Quebec in 1836, 9,328 bushels; Wheat entered at Quebec in 1836, 364,544 do.

*Recent Political Events.*—The government of Canada, when it was in possession of the French, was a pure despotism, being neither checked by council nor parliament. When the province was conquered by the arms of Britain, in 1759, no conquered people could be more liberally treated than were the French colonists of Canada. Their estates were untouched, and not only was their religion (the Roman Catholic) tolerated, but the large property with which it had been invested was preserved to it entire. In 1774, an act was passed, vesting the authority in a governor, aided by a council of not less than seventeen persons, and not exceeding twenty-three in number, who had power to frame ordinances, but not to levy taxes, except for making public roads and erecting a few local structures. By this act, the French law, which had been temporarily superseded, was restored. In 1791, a constitution, devised by Lord Grenville, and introduced by Mr Pitt, was granted to Canada. By this constitution, it was intended to assimilate the form of government in Canada to that of England. The governor stood for the king; a legislative council, appointed by the crown, for the house of lords; and a legislative assembly, elected by the people, for the house of commons. The qualification of an elector for the assembly was fixed at forty shillings in land in the county districts, and owning a house of five pounds rental, or renting one of ten pounds, in the towns. The division into representative districts was left to the governor. One important branch of the measure was the separation of the provinces of Upper and Lower Canada. Lower Canada was for the most part inhabited by descendants of the French, who were Roman Catholics, and had their own French laws, including very peculiar laws affecting the tenure of land. Upper Canada was peopled by emigrants from the former British provinces, now composing the United States, and by English settlers, chiefly if not entirely Protestants, and attached to the laws and customs of England. With the wish to give the English in Canada the advantages, which, as they alleged, they lost by the act of 1774, there was also a desire to secure to the French Canadians their religion and customs; and this liberal policy, it was thought, would be most effectually realized by separating them from the rest of the colony. A distinct constitution was therefore appointed for each.

The endeavour to assimilate the constitution of Lower Canada to that of Britain was perhaps unfortunate, inasmuch as the position of a dependent colony, formed of aliens, is different from that of an independent country. The constitution of Britain provides a supreme power, whereas it was not contemplated to give supreme power to Canada; and however liberally the colony might be governed, there must always be questions to be decided by the parliament of Britain, without reference to the wishes or even the interests of the colony, such as questions of peace or war, of trade with other colonies, with foreign countries, &c. It is now, also, a recognised principle in the working of the British constitution, that the ministry should command a majority in the house of commons. The sovereign, though able to name or dismiss his advisers at pleasure, is obliged to appoint those only who are acceptable to a majority of that house, otherwise the business of the public could not be long prosecuted with advantage. In Lower Canada, on the other hand, the executive was entirely independent of the house of assembly; the one branch of legislature was almost solely British, the other French; and for a long series of years the parties in the assembly who commanded large majorities were, on that special ground, excluded from every ministerial office. Lord Durham has given it as his opinion that much of the cause of Canadian disturbances lay in national antipathy; but this national hostility is only of recent growth, for during the war of independence with America, and the war of 1813, the French Canadians displayed every feeling of attachment to the British government, and rejected all invitations of fellowship from the

enemy. The *habitans*, in fact, ever since they came under British domination, have had every reason to be satisfied with the degree of civil liberty and worldly prosperity which they have enjoyed. Their religion has been allowed to retain all its privileges and property; their taxes have been exceedingly light, and their security of person and property as complete as in England. The contest with Britain, therefore, has arisen less from any real grievance or oppression, than from a struggle of the popular portion of the legislature to obtain entire control over the executive departments of government.

Foremost among the points at issue was the matter of *finance*. We shall not here trace the earlier struggles of the assembly. It will be sufficient, in the account of more recent events, to commence with the year 1828. For some time previous to that year, the expenses of the civil government of Lower Canada were provided by the revenues imposed by the act of 1774, and appropriated by the English treasury, partly by a sum of £5000 per annum previously appropriated by the Canadian legislature, and partly by revenues levied within the province, and at the disposal of the assembly from time to time. The system of defraying a part of the expenses by annual votes of the assembly was new about the year 1818, and arose out of the desire of the assembly to acquire the control of the purse. They now put forward two claims: first, they insisted upon their right to appropriate and control the whole of the expenditure, not confining themselves to that which was provided by their own votes; and secondly, they denied the right of the crown to apply the duties under the act of 1774. It is obvious, and was afterwards admitted, that so long as the assembly was called on to provide for and to regulate any portion of the public expenditure, it would virtually acquire a control over the whole. Impressed probably with this opinion, and desirous of conciliation, a committee of the house of commons, in 1828, recommended, that "the receipt and expenditure of the whole public revenue," including the duties of 1774, and apparently including also the hereditary revenues of the crown, "should be placed under the superintendence and control of the house of assembly;" but they proposed to annex this condition, that the governor, judges, and members of the executive council, should be made, by a permanent provision for their salaries, independent of the annual votes of the assembly. This report seemed to give general satisfaction to the colony, and the assembly appeared to limit their demands to the complete fulfilment of its provisions. They promised a civil list when "*the whole* public revenue arising within the province should be given up to them;" and lord Goderich, then secretary for the colonies, felt that it would be more generous, and fancied it would be equally effectual, were he to give up the revenues *first*, and trust to the assembly for granting a civil list afterwards. This he accordingly did, but he still reserved in the hands of the British government certain revenues known as the casual and hereditary revenues of the crown. This reservation was deemed very unsatisfactory, and the assembly passed a resolution that "under no circumstances, and upon no consideration whatever, they would abandon or compromise their claim to control over the whole public revenue." They determined, therefore, not to grant any permanent supply, and on the 8th March, 1831, they drew up a long list of grievances, which was presented to the governor (lord Aylmer), who transmitted it to the colonial office, with an admission that many of the complaints were well-founded. The government, in reply, declared that there was scarcely a point which it was not willing to concede, and the assembly expressed their satisfaction at the feelings of kindness and good-will manifested towards them by the government. In 1832, the assembly passed a supply bill, providing, or very nearly, for all the demands of government; and there were in this session other indications of a reasonable disposition in the assembly. In 1833 also, the assembly passed a bill of supply, but they now annexed to some of their grants certain conditions, which induced the legislative council to reject the bill. These conditions afforded the first instance of the exercise by the assembly of the power of the purse. To the grant of salary to each person holding office, all of whom were mentioned by name, they added a proviso, that he be not a member of the legislative council, or, as to others, of the executive council. The salaries of the judges were made conditional upon their not holding any other office under the crown. Mr Stanley, then secretary of state, gave orders for paying official persons out of that part of the revenue which had not been surrendered by lord Goderich.

In the same year, the assembly first proposed to make a fundamental alteration in the constitution of 1791, by making the legislative council *elective*. In 1834, similar contumacy prevailed in the assembly, and in this year a fresh appeal was made to the British parliament, and a new committee appointed to consider the petition of the assembly. It was in this year that the assembly passed their ninety-two celebrated resolutions, in which throughout the whole there are scarcely disguised threats of an intention to throw off the allegiance of the colony, and to apply the elective principle not only to the legislative council, but to the executive government. They declined also this year to pass any bill of supply whatever, and made a peremptory demand that the legislative council should be elective, without which nothing would be accepted as satisfactory. Changes of ministry in England, about this time, prevented immediate attention to Canadian affairs; but on the restoration of the Melbourne cabinet, a commission of inquiry was sent out, consisting of the earl of Gosford, Sir Charles Edward Grey, and Sir George Gipps. The first of these succeeded lord Aylmer as governor, and in his opening speeches professed the most conciliatory views towards the French or popular party. The address of the assembly was civil, but reiterated the demand of an elective council. Meanwhile Sir Francis B. Head, who was sent out to Upper Canada, made public part of the instructions of the British government, by which it appeared how little they were prepared to concede the demand of an elective council. Upon this the assembly was in a flame, complained that lord Gosford, by his smooth language, had deceived them, and insisted much more urgently than ever that the council should be elective, tracing its present constitution (the members being appointed by mandamus from the crown) to the prevalence of the aristocratic principle in 1791. The legislative council, indignant at the violent endeavours of the assembly to overthrow it, vented their resentment by rejecting almost every bill sent up from

the latter; and thus the two branches of the legislature were thrown into unhappy collision with each other. The assembly voted a supply for six months only, in order to give time for the British government to comply with their demands, but this was rejected by the legislative council, on the ground that several salaries were omitted. The assembly afterwards declined to vote supplies at all until their alleged grievances were redressed, and resolved that they should not even meet for business until the principle of an elective council had been recognized. The members had already begun to disperse, when lord Gosford, on the 4th Oct. 1836, prorogued the assembly.

The first report of the commissioners recommended various changes, in the hope of conciliating the Canadians; but by November, 1836, this hope had been entirely dissipated, and the final recommendations of the commissioners were measures of coercion and the exercise of arbitrary power, hinting, as an alternative, at the total suspension of the constitution. On the 6th March, 1837, lord John Russel proposed, in the house of commons, ten resolutions on the affairs of Lower Canada; among which were, "That in the existing state of Lower Canada, it is unadvisable to make the legislative council of that province an elective body, but that it is expedient that measures be adopted for securing to that branch of the legislature a greater share of public confidence:" "That while it is expedient to improve the composition of the executive council, it is unadvisable to subject it to the responsibility demanded by the house of assembly of that province." The eighth resolution declared that the arrear of £142,000 should be defrayed, first, out of the king's hereditary, casual, and territorial revenue, and then out of any other part of his majesty's revenues in the hands of the receiver-general of the province.* By a ninth resolution it was declared, that the hereditary revenue was to be given up in case the provincial legislature should see fit to grant to his majesty a civil list for defraying the necessary charges of the administration of justice, and for the maintenance of certain of the principal officers of the civil government. However slight the hope was that the resolutions of parliament would induce the assembly to vote the supplies, and go on with the business of the colony, it was doubtless right to give them an opportunity, and accordingly the two houses were convened on the 18th August. Before this time, seditious meetings had taken place, and votes were adopted in the most violent language of hostility, such as to induce the governor to call for troops from Nova Scotia. The assembly repudiated the parliamentary resolutions by a great majority, † and on the 28th of August, lord Gosford prorogued it.

Matters had now reached a crisis. Meetings of the malcontent party were held in various districts of the colony, and preparations were making for having recourse to arms. In the county of Two Mountains an active training was carried on, and all loyal or neutral residents were compelled to quit the territory. In the more populous portion of the Montreal territory lying south of the St Lawrence, a meeting was held, in which all principles but those of the purest democracy were renounced, and M. Papineau was chosen leader. On the other hand, loyal associations were formed, and volunteer corps rapidly organized. Government resolved immediately to arrest the most active agitators. A warrant was accordingly issued at Montreal against twenty-six, of whom seven, including Papineau, were members of the assembly. Nine were apprehended, but Papineau escaped. Two prisoners were rescued near Longueuil by the insurgents. On the 26th Nov. 1837, Lt.-Col. Wetherall attacked a fortified position of the insurgents at the village of St Charles, which he carried and fired. 300 of the malcontents are said to have fallen in this affair. About the same time Colonel Gore advanced upon St Denis, but owing to the smallness of his force was repulsed. St Denis and other strongholds of the rebels were evacuated on the destruction of St Charles. On the 13th Dec. Sir John Colborne, commander in chief, marched from Montreal at the head of the expedition to attack the chief post of the rebels at the Grand Brulé. On the following day an engagement took place in the churchyard of St Eustache, when the loyalist arms proved victorious, eighty of the enemy having been killed, and 120 taken prisoners. On the 15th, Colonel Maitland marched to St Benoit, the chief town of the Grand Brulé district, but on his approach, a large party of the inhabitants came out bearing a white flag, and begging for mercy. He entered the place without resistance, but some of the houses were fired by the loyalists, who could not be restrained from acts of violence. On the 13th Dec. Dr Wolfred Neilson, one of the rebel leaders, having been nine days concealed in the woods, was brought in prisoner to Montreal.

Lower Canada was now reduced to comparative tranquillity, but Upper Canada meanwhile was in insurrection. Many of the inhabitants of that province were emigrants from the United States, to whose institutions they were naturally partial, and many British residents had adopted extreme democratical opinions. This party, headed by Mackenzie, Duncombe and others, in 1834, obtained a majority in the Assembly, and, like the other province, drew out a long list of grievances, complaining, among other matters, of favouritism in the bestowal of offices and in the support of particular religious establishments, and urging, like the assembly of Lower Canada, a demand for an elective legislative council. Proceeding in the same hostile spirit, they, in 1836, for the first time, stopped the supplies, and Sir Francis Bond Head, governor of the province, on the 28th May, resolved to make an appeal to the people by a new election. After an arduous contest, the new assembly displayed a decided majority in support of the constitution. The disaffected complained that this result had been produced by extraordinary grants of land and even by violence, which allegations were declared, on the other hand, to be utterly false. So assured, at this time, was Sir Francis Head of the loyalty of the Upper Province, that on being requested to state what soldiers he could spare for Lower Canada, his answer was, ALL. Every soldier was removed out of the district, Sir Francis relying entirely on the loyal disposition of the majority of the inhabitants. In this state of things, Mackenzie, with a body of rebels, resolved to attack Toronto, but they were met and repulsed on the 7th Dec. by Sir Francis,

* Ministers afterwards, on the accession of Victoria, unwilling, as they said, to begin the government of a young queen by an act of coercion, advanced the amount by way of loan from the British revenue, to be ultimately reimbursed from the provincial funds.

† The minority favourable to government never exceeded 19 against 58.

at the head of the armed citizens. Twenty-five of the rebels were killed, while not a loyalist was even wounded. Mackenzie fled to the town of Buffalo, and excited considerable enthusiasm in his cause. With a small body he took possession of Navy island, situated on the Niagara, where he was joined by volunteers, many of whom belonged to the United States, till the number of his force amounted to about a thousand. The island was fortified with thirteen pieces of cannon, and Van Ransselaer, Sutherland, and others acquainted with military service, took command in the armament. A small steamer, called the Caroline, was employed by the insurgents in conveying troops and stores from the American shore to Navy Island. Captain Drew, under instructions from Colonel M'Nab, resolved to attack her. She was accordingly, on the 28th Dec. 1837, boarded by the British, while lying on the American side of the river, seized, set on fire, and committed to the rapids, which soon hurried her down, a flaming mass, over the falls of Niagara. It was alleged by the Americans, that several citizens were involved in her destruction, but the British assert, that all on board, who had not been killed in the rencontre, were first put on shore before she was set adrift. A heavy cannonade was afterwards opened upon Navy Island, by two companies of regulars, with a train of artillery who had arrived from Lower Canada, and the insurgents were obliged to evacuate it on the 14th Jan. 1838. Sutherland, with a party of fugitives, hastened to the extreme west. On the 3d of March an engagement took place between her majesty's troops and the insurgents on Point Pele island, within forty miles of the western extremity of the lake Erie, near the western boundary of the British possessions. This island was occupied by the insurgents in great force, when Colonel Maitland marched against it on the night of the 2nd, with some companies of the 32d and 83d regiments, two six pounders, and some volunteer cavalry. The march was made over the ice of the lake, and at daybreak the insurgents were attacked. As the island is about seven miles long, and covered with thicket, the action assumed the character of bush fighting; but the enemy ultimately were driven to flight, leaving among their dead Colonel Bradley, the commander in chief, Major Howdley, and Captain Van Ransselaer and M'Keon. Sutherland was taken prisoner. Most of the killed and wounded turned out to be citizens of the United States. Twenty-eight men of the 32d regiment were wounded, and two killed.

Meanwhile the British government considered it indispensable, for the present, to suspend the constitution of Lower Canada; and the Earl of Durham was solicited and prevailed upon to undertake its government, as well as that of all British America. He was empowered to form a sort of representative council, composed of members from each province, but to use them merely as advisers, and to call and dismiss them at pleasure. He arrived at Quebec on the 27th May, 1838. Four days after, a band of pirates from the United States and refugee Canadian rebels, seized upon and burned the Sir Robert Peel steamer, lying peaceably at anchor in the river St Lawrence or Lake Erie, at a distance of seven miles from French Creek. Lord Durham, in his progress through the Canadas, was received cordially by all parties. Generals Sutherland and Theller, Colonel Dodge, and seven other state prisoners, were sent to England. Wolfred Neilson, Bouchatte, Viger, and others of some distinction, were detained at Montreal by Sir John Colborne, on the charge of high treason; but as an impartial jury could not be counted on for their trial, and as lord Durham's object was not to rekindle party animosities, he ordered the prisoners, on confession of their guilt, to be deported to Bermuda, under penalty of death should they return. The same penalty was to be incurred by Papineau and others who had absconded, should they be found at large within the province. This ordinance was brought before the house of peers by lord Brougham, who made a motion, declaring it to be illegal, as condemning to death without trial, and to transportation to a colony not within the jurisdiction of the governor, but, at the same time, under the peculiar circumstances of the case, proposing an act of indemnity. This motion was carried against ministers; and, having consulted the law officers of the crown, they annulled the ordinance, but at the same time conveyed to lord Durham expressions of their general approbation of his measures and of their continued confidence in his administration. Lord Durham, on hearing of his implied condemnation by the act of indemnity, declared his intention to resign and return immediately to England. The news reached Quebec on the 20th of Sept., and on Saturday the 22d his lordship publicly announced his purpose to resign, to the delegates from the provinces of Nova Scotia, New Brunswick, and Prince Edward island whom he had invited to Quebec for consultation on the project of a union of the five provinces. He did not even wait for the official accounts, nor for her majesty's permission to resign, but consulting his own hurt feelings rather than the public service, he at once broke up his administration, and on the 1st Nov. set sail for England, reaching Plymouth on the 26th. Lord Brougham was burned in effigy in the presence of an immense concourse of citizens at Quebec, but beyond this ceremony, no violence was committed.

Two days after Lord Durham's departure, an attempt was made to seize and burn the steamer Victoria, which had carried some artillery for Montreal. The vessel escaped, but the rebels possessed themselves of the town of Laprairie without opposition, and compelled the inhabitants to leave it. On the following day, they attacked the village of Beauharnois, and after a sharp conflict obtained possession of it. They captured Mr Edward Ellice, M.P. and several others, whom they sent to Chateauquay, but who were afterwards set at liberty. They established their head quarters at Napierville, and their force amounted at one time to the number of 8000 men, generally well armed. They spent successive days at this town in the indulgence of the wildest excess. Martial law was proclaimed by Sir John Colbourne on the 4th Nov. 1838, and on the same day a tribe of Coughnawagas Indians attacked and defeated a numerous body of rebels, making 75 of them prisoners. On the 8th, colonel Taylor and a body of British settlers defeated at Odellton a large body of rebels on their way to join the main body at Napierville. On the 9th the rebels broke up from Napierville, and on the 10th and 11th Beauharnois and Laprairie were retaken. Sir John Colbourne concentrated his troops on the 12th at Napierville and Chateauquay, and executed, according to the Montreal journals,

a severe vengeance upon the rebels whom he found there, burning the houses of the disaffected throughout the whole district of Acadie.

An invasion of Upper Canada, by which the attention of the British commander might be distracted, and the military force of the colony divided and weakened, was part of the plan of the rebels. Accordingly, on the night of the 11th, 800 republican pirates embarked in two schooners at Ogdenburgh, fully armed, and provided with six or eight pieces of artillery, to attack the town of Prescott, on the opposite side of the river. They failed in their attempt to disembark at Prescott, but, by the aid of two steamers, effected a landing a mile or two below the town, where they established themselves in a windmill and some stone buildings, and repelled the first attempt made to dislodge them, killing and wounding forty-five of their assailants. On the 15th, Col. Dundas brought a reinforcement of regular troops, with three pieces of artillery, against the insurgents. From the water they were fired upon by Captain Sandom, who had two gun boats; and, after enduring the attack for about an hour, they hung out a flag of truce, and surrendered at discretion.

Another invasion from the American border took place on the 14th Dec. 1838. The insurgents, who amounted to about 400 men, came from Detroit, and landed at Moy, near the village of Windsor, when having set fire to a steam boat which was lying there, they proceeded to destroy the barracks and other buildings. Several loyalists were killed in cold blood; among others, assistant staff surgeon Hume, who, unarmed, accidentally fell into their hands. The militia, stationed at Sandwich, three miles below Windsor, speedily turned out, attacked the ruffians—for such was rather their character than that of political antagonists—and in a short time completely routed them, killing twenty-six, and taking as many prisoners.

Hitherto, the captives had been treated with great lenity, but it was now judged necessary to exercise greater rigour. A considerable number of the ringleaders were executed, and others were condemned to severe and ignominious punishments. Up to March, 1839, the whole number of rebels and pirates executed was thirty-four.

An idea may be formed of the composition of the insurgent force in Upper Canada from the following national classification of the prisoners taken at Prescott:—131 Americans, 9 Germans, Poles, and French, 8 Lower Canadians, 4 Upper Canadians, 3 Irishmen, 1 Englishman, and 1 Scotchman. It will be seen from this, that the great majority of the insurgents in Upper Canada consisted of adventurers from the United States, or, as they called themselves, *sympathizers*;—men of the most lawless habits and desperate fortunes. The American government itself, from the commencement of hostilities, displayed an earnest determination to preserve a strict neutrality. The president, Van Buren, issued proclamations, warning the people of the penalties to which they would become liable by engaging in hostilities with a friendly power, and the congress manifested an unanimous sentiment against any countenance whatever being shown to the Canadian insurgents. But the friendly disposition of the American legislature towards Britain could not prevent many desperadoes from the American borders from taking an active part in the cause of the rebels; and one of the consequences of the unhappy Canadian commotions, most to be feared, is the danger that they may ultimately lead to hostilities with the neighbouring states, in spite of every disposition on the part of the respective governments to preserve neutrality. Meanwhile, the British ministry propose to form a legislative UNION OF THE PROVINCES of Upper and Lower Canada, on the principles of a free and representative government, by which, it is conjectured, the animosities arising from race and local faction would be in a great measure removed, and the strength of the French party in Lower Canada would be neutralized by the attachment to the mother country of the Upper Canadians.

CANARIES, THE, OR FORTUNATE ISLANDS, (*a.*) situated in the Atlantic ocean, near the western coast of Africa, and belonging to Spain, are thirteen in number, of which Teneriffe, Grand Canary, and Forteventura, are the largest; Palma, Ferro, Gomera, and Lancerota, of secondary magnitude; and the remaining six little more than rocks. They were known to the ancients, and called by them the Fortunate isles, on account of the beauty of their climate.

The condition of the natives of these islands, before their conquest, by the Spaniards, in the fourteenth century, was similar to that of the people of Otaheite on their first discovery, and although in many instances their conduct was cruel and sanguinary, several of their customs, without their rude ceremonies, would not be unworthy of imitation. The language and manners of the inhabitants at the present day, are nearly the same as that of their conquerors, and excepting some few local customs, their laws and religion are entirely Spanish. The original inhabitants, known by the name of Guanches, were in the habit of embalming their dead, and depositing them in care. The processes of embalming must be similar in all places; Herodotus describes those in use among the Egyptians; and Spanish writers represent the mode followed in the Canary islands as resembling it. When the preparations were completed, the body was sewn up in goat-skins, and bandaged with leather; the kings and nobles were placed in a sarcophagus made of a hollowed tree; but in all cases the corpse was deposited in a grotto destined to that purpose. They much resemble, when discovered in the present day, those of Egypt in appearance, but soon crumble into dust on being taken out of the skins in which they are wrapped. At Fer, the catacombs were walled up, and domestic utensils were found in them. The most celebrated are those at Tenerife, between Arico and Guimar; the interior is spacious, but the entrance is in a steep cliff, and difficult of access; there are niches in the walls, in which the bodies were placed; and, when first discovered, there were upwards of a thousand mummies in the place; these are always found placed on a species of trestle, and five or six are joined together by the skin, the feet of one being sewed to that of the head of the next The wood-work of the scaffold is very perfect. It may be noticed, that Egypt and the Canaries are, as far as known, the only countries in which the preservation of the bodies of the dead was a universal custom.

The Canary islands at times are visited by fearful tornadoes, which sweep before them the dwellings of the inhabitants. The floods from the mountains in the rainy season bring down huge blocks of stone, which crush every object they

meet with in their course, and inundate the country to a fearful extent. At other times, they are visited by the plague of locusts, which devour every green thing on the earth, attack the palms, and strip the trees of their bark.

The chief produce of Teneriffe, and that for which it is most famed, is a celebrated wine, of which great quantities are annually exported. Sugar has also been cultivated here to a considerable extent; and the silk-worm is reared by the inhabitants, but not in any great number: tropical fruits also of every description grow here in great abundance. Another of their exports is *orchil*, a substance used by dyers; and in former times a great quantity of a wine called Malmsey was made in this island. At present, owing to its lying so far out of the usual track of voyagers, its exports are very trifling, if we except the wine to which it gives a name, and its orchil, which is esteemed excellent. We may also mention a kind of filtering-stone brought from Grand Canary.

The geological character of the whole of these islands proves them to be of volcanic origin, and their surface is composed of lavas of different kinds, while the craters of extinct volcanoes are visible in many places. In Teneriffe, the whole of the earth is said to be impregnated with sulphur. The island itself is a collection of mountains of various heights, in the midst of which is seen towering the gigantic peak, casting its evening shadow over the surface of the ocean for leagues in extent; and, while the shades of evening are hanging over the lower part of the island, having its summit lighted up by the rays of the setting sun. Among the numerous volcanoes which, in the lapse of time, have become wholly or partially extinct, the peak of Teneriffe is celebrated for its great altitude, its singular form, and its conspicuous and isolated situation. Its summit is between 12 and 13,000 feet above the level of the sea, and its conical crest can be seen in the air from the distance of 150 miles. The summit of the peak has at different periods been reached by adventurous travellers.

There are no rivulets or springs in the island of Ferro, the westmost of the Canaries, except on a part of the beach which is nearly inaccessible. To supply the place of a fountain, however, nature, ever bountiful, has bestowed upon this island a species of tree, unknown to all other parts of the world. It is of moderate size, and its leaves are straight, long, and evergreen. Around its summit a small cloud perpetually rests, which so drenches the leaves with moisture, that they continually distil upon the ground a stream of fine clear water. To these trees, as to perennial springs, the inhabitants of Ferro resort; and are thus supplied with an abundance of water for themselves and for their cattle. The trunk of this tree is about nine feet in circumference, the branches are not higher than thirty feet from the ground; the circumference of all the branches together is one hundred and twenty feet; the branches are thick, and extended, the leaves being about three feet nine inches from the ground. Its fruit is shaped like that of the oak, but tastes like the kernel of a pine-apple, and the leaves resemble those of the laurel, but are longer, wider, and curved.

CANARY BIRD, (*a.* to the account of the Canary in the article *Finch.*) The original stock of this bird is said to have been imported from the Canary isles about the fourteenth century; but the wild birds found there bear little resemblance, in song and plumage, to the domestic Canary.

There are two distinct species of Canaries, the plain and variegated; or, as they are technically called, the gay spangles, or mealy; and jonks, or jonquils. These two varieties are more esteemed by amateurs, than any of the numerous varieties which have sprung from them; and, although birds of different feathers have their admirers, some preferring beauty of plumage, others excellence of song, certainly that bird is most desirable where both are combined. The first property of these birds consists in the cap, which ought to be of fine orange colour, pervading every part of the body, except the tail and wings, and possessing the utmost regularity, without any black feathers, as, by the smallest speck, it loses the property of a show-bird, and is considered a broken-capped bird. The second property consists in the feathers of the wing and tail being of a deep black up to the quill, as a single white feather in the wing or tail causes it to be termed a foul bird; the requisite number of these feathers in each wing is eighteen, and in the tail twelve. It is, however, frequently observed, that the best-coloured birds are foul in one or two feathers, which reduce their value.

The dispositions of Canaries are as various as their colours; some are gay, sportive, and delight in mirth and revelry, while others are sullen, intractable, and lazy. Some cocks are most assiduous in assisting the hen to build her nest, and even to hatch the eggs, while others will destroy the eggs, or tear the young from the nest, and kill them in their rage: the gray ones will never build, and the person who superintends these must make a nest for them.

Syme seems to think that these birds might be naturalized to our climate, having seen a pair flying about at liberty, probably, an experiment to try if they would breed: and he thinks they had built a nest, from their being repeatedly observed flying in and out at one spot, on the precipitous bank at St Bernard's Well, near Edinburgh.

A small breeding-cage is all that is required for rearing these birds; but where a room can be allotted to the purpose, it ought to have shrubs for them to roost and build, with plenty of water to drink and bathe in, that being indispensable for all birds. The light should be admitted into the room from the east, for the benefit of the morning sun, and the windows should have wire-cloth, that they may enjoy the fresh air. The floor of the apartment ought to be strewed with sand or white gravel, and on that should be thrown groundsel, chickweed, or scalded rape-seed; but when breeding, they should have nothing except hard chopped eggs, dry bread, cake without salt, and, once in two or three days, a few poppy-seeds. About the 15th of April, they ought to be furnished with flax, soft hay, wool, hair, moss, and other dry materials, for building the nest, which usually occupies three days; but when the hen has sat eight or nine days, it is necessary to examine the eggs, holding them carefully by the ends, against the sun or a lighted candle, and to throw away the clear ones. When the young are to be reared by the stick, they must be taken from the mother on the eighth day, taking nest and all. Prior to this, the food should consist of a paste composed of boiled rape-seed, the yolk of an egg, and crumbs of cake unsalted, mixed with a little water: this must be given every two hours. This paste ought not to be too wet,

and must be renewed daily, until the nestlings can feed themselves. The hen has generally three broods in the year, but will hatch five times in the season, each time laying six eggs.

The process of moulting, which takes place five or six weeks after they are hatched, is frequently fatal to them. The best remedy yet known is to put a small piece of iron into the water they drink, keeping them warm during the six weeks or two months which generally elapse before they regain their strength.

Canaries are also subject to repletion from superabundance of food, to epilepsy, to asthma, to ulcers in the throat, and to extinction of the voice. Repletion and ulcers may be cured by confining the bird to the cooling diet of water and lettuce-seed. For epilepsy it is usual to inflict a slight wound in the foot. Asthma may be cured by plaintain and hard biscuit soaked in white wine. For extinction of voice, the cure ought to be hard yolk of eggs, chopped up with crumbs of bread, and for drink a little liquorice root, or a blade of saffron in water. In all cases and at all times the bird should have plenty of water to bathe in.

Canaries are bred in immense numbers, both for amusement and commerce, in France, Tyrol, Germany, and in this country: those from Germany are in the least esteem, from their living only one or two years in this country, although the cock of this variety is an approved songster.

CANCER, (*a.*) At the sitting of the Academy of Sciences, Paris, January 13, 1838, MM. Baupherthuy and Adelde-Roseville addressed to the academy a detailed note on the animalculæ which are found in the contiguity of cancerous ulcers. These observations have proved the presence of animalculæ in all the cancers which they have examined. These gentlemen have sought the means which are best fitted to destroy the animalculæ, and their experiments have led them to the following results:—Brandy, the tincture of iodine, concentrated solutions of the double chloride of mercury, of the chloride of gold, of arsenic, of the salts of copper, of the nitrate of silver, the laudanum of Sydenham and Rosseau, kill the animalculæ instantaneously. Solutions of the same agents, in the dose of two grains to the ounce, do not make their action felt on the animalculæ before the end of a quarter of an hour or twenty minutes, but destroy them insensibly after a space of time more or less long.

CANNON, (*a.*) A great improvement has recently been effected in the construction of cannon, by which these engines of war will probably become infinitely more destructive than formerly. The improvement, strange to say, was for the first time put to the test in Turkey, under the patronage of the late sultan, who was entirely pleased with it. The inventor is a young man, named John W. Cochran, son of a merchant in New Hampshire, United States, of whom and of his invention the following particulars are given in the American periodicals:—

"Mr Cochran was brought up to no particular business. At the age of sixteen, he discovered a strong taste and passion for mechanical experiments, and was constantly occupied in the construction of machinery, which his father approving of, encouraged, and expended several thousand dollars in his behalf, in the cost of the different kinds of apparatus required. When only eighteen, he made the discovery in question, but did not perfect it until three years after. He then went to France and England, and exhibited his model cannon to Louis Phillippe and William IV. While at Paris in 1833-34, he was requested by the Turkish ambassador to explain it to the Turkish minister at London, and accordingly went to Woolwich, and performed a series of experiments before the latter personage, which gave so much satisfaction, that he urged Mr C. to visit the sultan at Constantinople, and for that purpose provided him with the most flattering recommendations to the court of the sublime porte. Mr Cochran arrived at Constantinople, February 11, 1836, was received with great distinction, and introduced to the sultan by the grand vizier. His Turkish majesty was highly pleased with the experiments made with the model, told Mr Cochran he was satisfied it would be generally adopted, and requested him to cast a twelve pounder on the same principle. He was provided with elegant apartments in Pera, raised to the dignity of master of cannon, and furnished with as many workmen as he required for the accomplishment of his task. Mr Cochran, however, finding there was no good foundry or mechanics, was obliged to undertake the work with his own hands; and though not brought up to the business of making machinery of any kind, by dint of much labour and perseverance made himself all the necessary implements, the augurs and the wooden apparatus for boring with horse power, and the preparations required for procuring the proper castings. He succeeded entirely to his wishes, and cast and bored three cannon, two of one pound each, and the third, a twelve pounder, which last was finished in a style as perfect as he could have desired. On the 14th September following, he proved this last piece to his entire satisfaction, in the presence of all the Turkish government, who were delighted with its execution, and made a highly flattering report to the sultan. He fired it off in the presence of those officers to their utter astonishment a hundred times in fifteen minutes. The sultan, when he heard of it, could scarcely believe it, and directed Mr Cochran to perform the same experiments in his presence. The most extensive preparations were accordingly made for this important trial, which was to take place at Tarache, on the European side of the Bosphorus.

"No less than three thousand troops were assembled at this spot. The sultan at the hour appointed came over from his summer residence on the Asiatic shore, rowed in one of his splendid vessels, and preceded by a long line of other boats of the same description. As the vessel was nearing the wharf, Mr Cochran, at the suggestion of Halil Pacha, the sultan's son-in-law, and commander in chief of the land forces, fired off a salute of twenty-one guns (the customary number), with the experimental cannon, which consumed less than two minutes, and struck the assembled multitude with amazement. As the sultan at this moment stepped on the wharf, Halil, accompanied by the grand vizier and other dignitaries, ran to his majesty, and the former making the usual salaam of kissing the sultan's foot, announced to him with feelings of exultation that could scarcely be repressed, the wonderful success of the machine-cannon, as they appropriately named it. The sultan, arrived at his tent, sent for Mr Cochran, and after a short conference, in which Mr Cochran conversed chiefly in the Turkish language, which he had partially acquired, the sultan, renewing his expressions of

kindness, requested him to perform the experiment in his presence. The cannon was fired as before, a hundred times in fifteen minutes, during which the barrel acquired 650 degrees of heat, while the revolving cylinder which contained the charges was comparatively cool, being only 250 degrees of temperature. The sultan asked for the bill of expenses, and being told by Mr Cochran that it was left to his own pleasure, he went the next day at the request of the sultan, to visit him at his palace. The bag of gold he there received was truly an imperial present, and enough to make his fortune. Mr Cochran soon after returned to America, with the understanding that he should have a contract for supplying a large number of cannon of the pattern exhibited, whenever it could be agreeable for him to execute it." His invention has since been taken into consideration by the American Institute, with what result we have not heard; but a recent New York paper states that the patent right of the *many-chambered non-revolving rifle*, as it is called, has been sold by the inventor to a company, for the enormous sum of three hundred thousand dollars.

CAPELIN; a small and delicate species of fish, greatly resembling the smelt. It visits the shores of Newfoundland and Labrador about the months of August and September, for the evident purpose of depositing its spawn upon the sandy beaches. At such times, the swarms of these fish are so numerous that they darken the surface of the sea for miles in extent, whilst the cod prey upon them with the utmost voracity. The manner of the capelin's depositing its spawn is one of the most curious circumstances attending its natural history. The male fishes are somewhat larger than the female, and are provided also with a sort of *ridge*, projecting on each side of the back-bones, similar to the eaves of a house, in which the female capelin is deficient. The latter, on approaching the beach to deposit its spawn, is attended by two male fishes, who huddle the female between them, until her whole body is concealed under the projecting ridges before mentioned, and only her head is visible. In this state they run, all three together, with great swiftness upon the sands; when the males, by some imperceptible inherent power, compress the body of the female betwixt their own, so as to expel the spawn from an orifice near the tail. Having thus accomplished its delivery, the three capelin separate; and paddling with their whole force through the shallow surf of the beach, generally succeed in regaining, once more, the bosom of the deep. It is an entertaining sight, while standing upon the shore, to observe myriads of these fishes, forsaking their own element, and running their bodies on the sand in all directions. Many of them find it totally impossible to return to the water, and thus the beaches of Labrador are frequently covered with dead capelin.

The cod are taken with hooks baited either with capelin or herring. Dried capelin have of late years come to be used in London as a relish for the breakfast table.

CAPE OF GOOD HOPE, (*a.*) The aboriginal inhabitants of the southern extremity of the continent of Africa, may be divided into three principal groups; the Hottentots, the Bosjesmen, or *Bushmen*, and the Caffres. The Hottentots were the original inheritors of the country now forming the colony of the Cape; the Bushmen are the wild tribes of Hottentots driven beyond the boundaries of the colony by the settlers; and the Caffres are a distinct race of warlike natives, possessing the south-eastern portion of the continent beyond the boundary-line of the colony. (See the article *Caffres* in Supp.)

The Cape of Good Hope was unknown to the ancients, unless full reliance is placed on the account given by Herodotus, of the Phœnician navigators, who, sent on a voyage of discovery by Necho, king of Egypt, are said to have sailed down the Red sea, and returned to Egypt by way of the Mediterranean. This solitary fact excepted, the southern boundary of the great continent of Africa was utterly unknown to the civilized world, until it was discovered by the Portuguese in their daring attempts to find a passage by sea to the East Indies. The first European who came in sight of the Cape, was the Portuguese navigator Diaz, 1493; but the bad weather he experienced was so great that he was obliged to relinquish his enterprise, and return to Europe, naming the inaccessible land the Cape of Storms; but the king of Portugal, John II., conceived better hopes from its reported appearance, and bestowed upon it its present name of the Cape of Good Hope.

In 1497, the celebrated Vasco de Gama doubled this celebrated Cape, and opened the way to the discoveries afterwards made in the East Indies by the Portuguese. For many years after, its harbour, Table Bay, merely served as a place of refuge to the vessels of the European nations, whose enterprise led them to that quarter of the globe.

In the year 1650, the Dutch first effectually formed a settlement in this spot. But thirty years previous to this, the captains of two ships belonging to the East India Company of England had taken formal possession of the land in the name of king James I. A full account of this transaction is entered on the journals of the Company. The first part of the coast which was colonized by the Dutch, was on the banks of the Great Fish river; but this was soon abandoned, on account of its bad harbourage, and De la Goa Bay, further north, was selected in its stead. Soon afterward, the representations of Van Riebeck, a surgeon of one of the Dutch ships, induced the managers to remove the colony to its present locality at Cape Town. The limits of the colony were gradually extended by the Dutch to nearly their present dimensions, and they remained in undisturbed possession until it surrendered to the British in 1795. It was, however, restored at the peace of Amiens in 1802, but again taken in 1806, and since then has remained in the hands of the British.

The history of this country, from its first colonization almost to the present time, consists of a series of unjust measures and cruel acts, perpetrated by the settlers against the natives. The Dutch government, in first taking possession of this coast, did so with the simple intention of occupying it as a useful possession for the purpose of refitting their vessels engaged in the East India trade, and supplying themselves with water and other necessaries. As a proof that the intentions of the Dutch government were good, we find the resolutions of the council in 1651 contain a public supplication to the Almighty for the diffusion of the principles of the reformed Christian religion amongst the natives, then only known by the name of *Wilde Brutaale Menschen*, (wild brute men); and for many years afterwards every effort was made to conciliate them, by fining and punishing those who

ill-used them, by forbidding retaliation, and endeavouring to prevent their being provoked by ill-language. This mode of annoyance seems to have been so prevalent, that it was ordered they should not be called *Zwarte stinkende honden*, (black stinking dogs): on account of the indisposition of the government to extend their territory, it was not until twenty years after their first settlement that they became possessed of any considerable portion of land. By that time they had obtained power over that part of the present colony known by the name of Cape District, the inoffensive Hottentots offering but little opposition. They soon discovered the predominant passion of this weak and peaceable people for spirituous liquors, and that a bottle of brandy was a passport through every horde. With this, and tobacco, iron, and a few paltry trinkets, they purchased a part of the country, and of their stock in cattle, and then took the rest by force. A cask of brandy was the price of a whole district; and nine inches in length of an iron hoop the purchase of a fat ox. The boors, or Dutch farmers, although against the wishes of the government, still continued to extend the boundaries of the colony by fresh encroachments, pushing on from one spot of good pasturage to another, dispossessing the natives, and committing the most unparalleled acts of barbarity. The consequence was, that the original inhabitants rapidly decreased, and when the British took possession of the colony, that which had been a thickly populated country, was found to contain within its boundaries but 15,000 of the native Hottentots, and these in a state of abject slavery. During a series of years, the only alleviation of their miseries which the aborigines experienced, arose from the exertions of the Christian missionaries, who, under great disadvantages, undertook their conversion, and their instruction in some of the arts of civilized life.

The country at present occupied by the colonists is about 600 miles from east to west, with a mean breadth from north to south of 233 miles, containing nearly 140,000 square miles. Although it contains considerable tracts of excellent pasturage, the greater portion of its surface is occupied by sandy and sterile plains, and ranges of naked and inaccessible mountains; but this remark does not apply to all parts, particularly to its eastern boundary, Albany District, or to the country of the Caffres beyond the borders, which is covered in great part with the most luxuriant vegetation.

*Cape Town*, (*a.*) the capital of the colony, stands on a gentle declivity sloping towards the sea. On every side except this, it is surrounded by lofty mountains. It is a regular and neat-built town, and well watered by a plentiful stream which issues from the Table Mountain. Many of the streets are of considerable breadth, having canals of water running through them, which are walled in and planted on each side with oaks, but others are narrow and ill-paved. They are all straight, however, being laid out in a line, and intersect each other at right angles. The houses are in general built with stone, and whitewashed; and the greatest number are two stories high, with flat roofs. The spacious squares give the town an open and airy appearance; the public market is held in one; another is the common resort of the farmers and graziers, with their waggons; and a third is used as a parade for exercising the troops. This last lies between the town and the castle, and has two of its sides completely built up with large and handsome houses. The castle stands a little east of the town. It is a pentagonal fort, surrounded with a ditch and regular outworks, and contains within its walls the Lombard-bank, the orphan-chamber, and most of the public offices of government. It also affords accommodation for 1000 men with their officers, and has magazines for artillery, stores, and ammunition. The barracks, originally intended for an hospital, granaries, &c., which, with its two wings, occupies a part of one of the sides of the great square, is a large and regular edifice, and has sufficient convenience in the upper part of the building for 4000 men. The other public buildings are the Calvinist church, the Lutheran church, the court of justice, the guard-house, and the theatre. Behind the town, on the acclivity of Table Mountain, is the government-house, and a beautiful public garden, which is an oblong piece of ground, containing about forty acres of rich land, divided into forty-four squares by oak-hedges. Part of it has been appropriated for the reception of scarce and curious native plants, and for experiments upon such Asiatic and European productions, as may seem most likely to benefit the colony. Over the same acclivity are also scattered a number of handsome villas, each of which is surrounded by plantations and gardens. Besides the castle, the town is defended by many other forts and batteries placed on different eminences.

In 1831, the population of Cape Town was 19,186; there being of males 9331, and 9855 females. It may now be estimated at above 20,000, of whom upwards of 10,000 are white inhabitants, the majority being Dutch or of Dutch descent.

The celebrated mountain called *Table Mountain* extends from east to west for the length of two miles. The bold face that rises almost at right angles to meet this line, is supported, as it were, by a number of projecting buttresses, that rise out of the plain, and fall in with the front a little higher than midway from the base; these, and the division of the front by two great chasms into three parts, give to it the appearance of the ruined walls of some gigantic fortress. The Table-land at the summit of the mountain is 3582 feet above the level of Table Bay. A remarkable natural phenomenon takes place here during the summer season. It is a dense mantle of vapour, called the *table-cloth*, which rests upon Table Mountain, and afterwards rushes over its precipitous sides like a cataract of foam. In summer the prevailing wind is the south-east, and it bears in some degree an analogy to the trade-winds and sea-breezes of the tropics. When sufficiently strong to surmount the Table Mountain, the first indication of the fact is a little mist, which is seen to float like a thin fleecy cloud on a part of it, about ten or eleven o'clock in the forenoon. By noon the mountain becomes fringed with dew; and half an hour later, the mist is so dense as to produce a general obscuration. In another half hour the little cleft between what is called the Devil's Berg (mountain) and the Table Mountain, pours over the cloudy vapour; and at two o'clock the first-named elevation is capped by the cloud. The Table-Cloth is now said to be completely spread; the south-east wind, having, so to speak, overflowed the towering barrier which arrested its course, now rushes down the mountain into Table Bay with resistless fury, producing loud and terrific noises as it forces

its way onwards. While the Table Mountain remains covered with the dense cloud, fragments of the vapour are torn from it by the force of the wind, and are hurried about the sides of the mountain, assuming a variety of fantastic shapes, and playing about the precipice according to the direction of the different currents of wind. This phenomenon lasts till about five in the afternoon, when a little clearing, which takes place on the western edge of the mountain, announces that the Table-Cloth is about to be folded up. By six or seven, the clearance has considerably advanced; and by eight or nine, every vestige of it is gone, and nothing is seen about the mountain but an ethereal sky and the twinkling stars. Such is the singular phenomenon of the Table-Cloth during the prevalence of the south-east wind. When it continues to blow during the night, the mantle of vapour disappears in the same manner. In this case, a little white cloud is seen suspended like a canopy over Table-Mountain early in the morning. By ten o'clock the vapour begins to curl and play about the mountain, and exactly the same phenomenon takes place as before. When the wind is only of short duration, and in a hot clear day, the first indication of the approaching gale is the vapour resting in scattered parcels on the mountain. These augment as the wind increases, but it is not till the whole elevation is covered, that it forces its way with such violence down the precipice. In the evening about nine, the Table-Cloth is gone, and with it the wind, when a calm and beautiful night succeeds. A true solution of the whole appearance, with the circumstances attending it, does not seem yet to have been given. The prevailing theory is, that the south-east wind passing over the ocean is loaded with moisture, and that the coldness of the Table-Mountain condenses it. But this hypothesis is not well supported by the fact that the south-east wind is generally of a dry and evaporative nature.

*Graham's Town* is the second town in the colony, and the capital of the eastern frontier; it takes its name from Colonel John Graham, who formerly commanded on the frontier. It was colonized in 1820, by three thousand seven hundred settlers, sent out from England for that purpose. Graham's Town contains about 3000 inhabitants, and 700 houses, of all descriptions, from a cottage to a mansion, rendered pleasing by the gardens and pleasure grounds with which they are intermixed. The church, which is a plain Gothic building, is the most conspicuous building in the view. There are, also, several dissenting chapels, public and infant schools, a gaol, a reading room, subscription libraries, two tanneries, and a printing-office, from which a newspaper, called the *Graham's Town Gazette*, is issued. The export-trade of this place is already considerable, and rapidly increasing.

The year at the Cape is said to be divided into two periods, called the good and the bad moonsoon; but it may properly be separated, as with us, into four. The spring, from the beginning of September to that of December, is the most agreeable season; the summer, from December to March, is the hottest; the autumn, from March to June, is variable weather, generally fine, the latter part very pleasant; and the winter, from June to September, though in general pleasant, is frequently very stormy, rainy, and cold.

Although many of the mountainous parts of the Cape colony are composed of granite, no mineral substances of any value have as yet been discovered; the chief productions consisting of wool, cattle, horses, and hides, corn, and wine. In some parts, particularly in the western extremity, many of the tropical fruits arrive at maturity, as guavas, pomegranates, oranges; and all the fruits cultivated in Europe come to perfection in every part of the colony. The numerous rivers, or rather mountain-streams, with which the country is intersected, are in few instances available for the purposes of navigation. The principal of these are, the Oliphant's (*Elephant's*) river on the west, the Great Fish river on the eastern part of the country, and the Sunday river; many of the other streams are merely periodical torrents, which continue to flow during the rainy season.

The colony of the Cape of Good Hope is divided into various districts, viz. *Cape district;* population in 1833, (exclusive of Cape Town) 12,475. *Stellenbosh district;* population in 1833, 16,137. *Worcester district;* population in 1833, 8900. *Swellendam district;* population in 1833, 15,540. *George district;* population in 1830, 8223. *Uitenhage district;* population in 1829, 8360. *Albany district*, (the chief location of the English and Scotch settlers in 1820) population in 1833, 10,298. *Somerset district;* population in 1833, 11,715. *Graaff Reinet;* population in 1834, 14,800. The total population of the colony may be estimated at present at upwards of 150,000, of whom it is calculated that 60,000 are whites.

The revenue of the colony in 1832 was £130,808; expenditure, £126,889.

The government of the colony is conducted by a governor, nominated by the crown, aided by an executive council. A large proportion of the colonists are strongly in favour of an elective legislative assembly. Each district has a civil commissioner, who acts also as a resident magistrate. The laws are administered by a supreme court, presided over by a chief justice, and two puisne judges, who hold four terms in the year.

The military establishment of the colony is three regiments of infantry, the head quarters of two being at Cape Town, and of the other at Graham's Town. There is also a detachment of royal artillery, a party of royal engineers, and a regiment of mounted riflemen, called the Cape cavalry, the privates of which are principally Hottentots.

The Dutch colonists are divided into Calvinists and Lutherans, the former of whom correspond almost entirely, in doctrine and discipline, with the Church of Scotland. In each district with a Calvinistic congregation there is a minister from the Scottish Church, with a salary of £200 a year. The English or Episcopalian Church ranks next in point of numbers: it is included in the diocese of Calcutta, with a resident senior chaplain on a salary of £700 a year. The missionary societies in this country have a variety of "stations" in the colony. In April, 1829, the freedom of the press was established in the colony, and there are now several newspapers printed there—two, at least, at Cape Town and one at Graham's Town. There is also a monthly *Cape Literary Gazette.*

The staple products of the colony are corn, wine, wool, provisions, oil, aloes, and fruits. The adaptation of the country to rearing vast flocks of fine-woolled sheep is at least equal to that of Australia, and in every other respect it is, we consider, much preferable to that highly-vaunted portion of the globe as a field for emigration.

CARBAZOTIC ACID; an acid discovered by Welter, and sometimes called Welter's Bitter. It has been chiefly studied by Gay-Lussac, Dumas, and Liebig. It is formed by the action of nitric acid on indigo, aloes, silk, and some other organic substances. It forms yellow, shining scales, soluble in water, to which they give an intense yellow colour and a very bitter taste. It forms yellow crystallizable salts with the bases. That with potash is so sparingly soluble that a solution of carbazotic acid in alcohol may be used as a test for that alcali. The name is derived from its composition, which exhibits a large proportion of carbon and azote. According to Liebig, it contains, carbon 31·457, azote 14·766, oxygen 53·777.

CARBONIFEROUS FORMATION. The carboniferous series of strata, in geology, is so called because a large proportion of vegetable and animal carbon pervades the rocks composing it. It includes the mountain limestone, coal measures and shales, and sandstone conglomerates. Carboniferous or mountain limestone exists in extensive beds immediately below the strata containing coal, and above the gray wacke series. It is of a compact structure, varying from a light gray to a dark brown, or bluish black colour; is disposed in strata, and these alternate with clay, slate, or an impure limestone, called by the workmen *blaes*. This limestone is full of the remains of marine shells and animals, so much so as in many cases to appear entirely composed of such materials. It thus appears to have formed the bottom and shores of a former ocean, although now the strata are found broken up from their original horizontal position, forming the sides and summits of mountains, frequently of considerable height. The fossil remains consist chiefly of encrinites, orthoceratites, productus, spirifer, tenebratula. Beds of fresh water shells, and the remains of fishes and plants, have also been discovered in this limestone, affording proofs that lakes and rivers must have existed at the period of its formation. Mountain limestone lies below the coal strata of the south and south-west of Scotland; stretches into the north and western counties of England, forming mountains of considerable height; and is found to prevail in many parts of the continent of Europe and in North America. Lead ore is found abundantly in this limestone. Many of its varieties receive a fine polish, and are used as marble for domestic ornaments. It is of various colours, according to the substance contained in it, and is variegated by marine shells, alumina, iron, and other minerals. A dark blue or black variety is called Lucullite, from Lucullus, the Roman general. It is used extensively for domestic and agricultural purposes, after having been burnt in kilns. By this process the animal and vegetable matters which impart to it a dark colour are destroyed, and it becomes a pure white. The carboniferous sandstone consists of alternate beds of a white yellow or reddish colour, varying in thickness from five to ten and twenty feet, with beds of shale and coal interspersed. Below the coal seams is found a band of dark heavy matter, containing iron, called from its property of resisting great heat, fire clay. The carboniferous sandstone has evidently owed its origin to the decomposition of granite and primary schists, for it exhibits a compound of those ingredients, worn into minute nodules; sometimes these are of such a size as to form millstone grits and anglomerates. The deposit has usually been formed in hollow troughs or basins, and in the deepest parts extends to 2 or 3000 feet. The alternative of shale, coal, and sandstone strata, prevalent throughout all this series, indicates a periodical deposition. There are often appearances of drifting or sudden accumulation of large masses of the sandstone, where large trees of forty and fifty feet have been carried down and lodged transversely across the strata. The vegetables discovered in the coal strata consist of a variety of species, many of them differing from plants at present in existence, and all of them indicating a tropical nature. They chiefly consist of plants allied to ferns, reeds and some species of palms. Of the trees, the greater part belong to the coniferæ or pine tribe. These coniferæ resemble the auraucarias of New Holland and South America, much more than any pines at present natives of our northern regions. There is a marked similarity between the fossil plants of the coal measures in every different region of the globe hitherto investigated, so much so that the fossils of the torrid and temperate zones are identical with those found in Melville island and Greenland. After the deposition of the coal seams in their varied horizontal position, the beds have suffered many convulsive disruptions, by which the continuity of the strata has been greatly interrupted, and many faults or slips formed, as well as portions of the seams elevated to the surface of the soil. Iron ore, either in beds, or nodules, or flat bands, is a usual accompaniment of coal strata.

CARCASSONNE; a town in the south of France, situated in the department of Aude, and on the banks of the river which gives name to the department. It lies due south from Paris, at the distance of about 390 miles in a direct line, or nearly 500 by the road. It is a place of great antiquity, having existed before the campaigns of Cæsar, who speaks of it as one of the towns existing in *Gallia Ulterior*. It is mentioned more than once by the Roman writers of a later age. On the downfall of the empire it passed successively into the hands of the Visigoths, the Saracens, and the Franks; and under the rule of the last it was subject to counts of its own, who established themselves in this part of France, and transmitted their authority to their heirs. It came into direct possession of the crown of France about the middle of the thirteenth century, being then ceded by its count to Louis IX., or St Louis, who reigned as king of France from 1226 to 1270.

Carcassonne stands on both banks of the river Aude, though the two parts into which the river divides it may be considered as almost perfectly distinct. On the right bank is the old town, or *cité*, half deserted; it is surrounded by walls, the appearance of which sufficiently denotes their antiquity, and composed of narrow, dirty streets. It contains a fine ruined castle and a cathedral; the latter was erected about the end of the eleventh century. On the left bank of the river is the lower town, which is altogether modern, and built with straight streets, crossing at right angles. It has a *Grande Place*, planted with trees, surrounded by well-built houses, and decorated in the middle with an insignificant fountain, and the usual edifices found in a middle-sized French town. Some manufactures are carried on in the town; the chief of them is that of woollen cloth, which was established in the reign of Louis XI., and much encouraged by Colbert, the celebrated minister of Louis XIV.

Carcassonne is memorable, in an historical point of view, for its share in the crusade, which was carried on, in the early part of the thirteenth century, against the Albigenses, in the south of France.

CARDONA; a town of Spain, in Catalonia, twenty leagues from Barcelona, famous for its salt mines. The mines are situated about three miles to the east of the town, and resemble a huge stone quarry about twelve miles in circumference. It is most truly an ocean of salt, for there is not the smallest particle either of mould or gravel. The salt is of the finest quality, and would alone supply the wants of Europe for centuries. The Cardonero, a mountain-stream not more than twenty feet wide, flows through the midst of the mine in a bed of salt, which looks almost like the work of human hands. For many miles of its course it deposits salt upon its banks, and the country people along its whole extent till its junction with the Llobregat, where it loses its saline qualities, use the water for culinary purposes in lieu of salt. Fine flocks of sheep feed on its banks.

The town contains a good square, a large cathedral, five or six convents, and about 3000 inhabitants. It has excellent wine, an abundance of game and fish, and large flocks of sheep and goats. It produces fine fruit, such as citrons, mulberries, and almonds; and sends large quantities of hazel-nuts and pines to Barcelona: its vegetables are excellent, but the climate is too rough for the olive, orange, or the finer fruits of the south. The inhabitants chiefly maintain themselves by the sale of various little articles cut out of rock-salt, such as rosaries, images, and animals. Provisions are uncommonly cheap, but, with all the resources which nature has scattered around them, there are but few who are affluent. Every house receives annually an aroba, 26 lbs., of salt, gratis, and plumes itself upon paying fewer taxes than any other town in Catalonia.

CAREY, William, D. D. M.A.S., of Calcutta, an eminent Christian missionary and Oriental scholar, was born at Paulerspury, in Northamptonshire, on the 17th of August, 1761. His father kept a small free-school in the village, in which he gave his son an ordinary English education; but, at a very early period, William Carey discovered a great aptitude in acquiring knowledge, and much diligence in seeking it. When he had attained the age of fourteen years he was apprenticed to a shoemaker in the village of Hackleton. There his correct deportment, and the earnest but modest and intelligent manner in which he made inquiries on religious subjects attracted the notice, and obtained for him the friendship, of the Rev. Thomas Scott, then of Ravenstone. While resident at Hackleton, and before he had reached his twentieth year, his mind became seriously and devoutly affected by the gospel of Christ, which rather increased his zeal than retarded him in the pursuit of learning. He about this time united himself in Christian communion with a Baptist congregation, and commenced village preaching, and in the year 1783 was publicly baptized at Northampton, in the river Nen, by the late Dr Ryland. Three years afterwards he was chosen pastor of the Baptist congregation at Moulton, near Northampton.

His success in biblical studies led him to contemplate the state of the heathen world with feelings of pious sympathy; and in order to retain the information on the subject which from time to time he collected, he constructed a large outline map, consisting of several sheets of paper pasted together, which he hung up against the wall of the apartment where he continued to employ himself at his business, and on which he made notes of the population, religion, and other circumstances of the several countries described. The substance of these notes he afterwards published in a work entitled "An Inquiry into the Obligations of Christians to attempt the Conversion of the Heathen."

From Moulton he removed to Leicester in the year 1787, having been invited to take charge of the Baptist congregation in that town. In this new station his zeal and perseverance gained for him many friends; and his mind still dwelling upon missionary enterprise among the heathen, he made it the constant subject of conversation with neighbouring ministers, until he had inspired them with similar views to his own, and disposed them to associate for the accomplishment of their benevolent purpose. This they did on the 2d of October, 1792, when they assembled at Kettering in Northamptonshire, and then formed themselves into a Baptist Missionary Society. The minds of the brethren thus associated were immediately directed to Carey as the most fit agent for the execution of the design. India was the field which they chose for the commencement of their operations; but here there were obstacles far greater than any which at present exist, and the disinclination of Mrs Carey to quit her native country was, in his case, a difficulty peculiar and of great magnitude. But these impediments were surmounted by zeal and devotion. Mr Carey, with Mr Thomas, a fellow-labourer, who died in India not long after his arrival, was solemnly designated to the work of an evangelist by the Baptist ministers of the midland counties, assembled at Leicester on the 20th of May, 1793; and on the 13th of June following, the two missionaries embarked on board a Danish Indiaman, accompanied by Mr Carey's whole family.

Early in 1794 they arrived in Bengal, and Mr Carey was invited to take charge of an indigo factory near Malda, the property of Mr Udney, a servant of the East India Company of high rank. He accepted the invitation, and succeeded in the establishment of a school in the neighbourhood of his factory, where he began to preach in the language of the country every Sabbath day, and on one other day in every week. In 1797, he made a journey into Bootan, and obtained the consent of the Souhah for an attempt to introduce Christianity into that country, so soon as a fit agent could be provided. In the same, and in the following years, he preached publicly in Dinagepore.

Towards the close of the year 1799 he resolved to relinquish his appointment in the neighbourhood of Malda, and to take up his residence in the Danish settlement of Serampore, a place which has since derived its chief importance and celebrity from its being the seat of this mission. Mr Carey appears to have been induced to take this step in consequence of the East India Company's government having, from political considerations, refused to permit some younger missionaries, who had been sent to his assistance, to establish themselves with him at his inland station. At Serampore, the missionaries had assurance that their object was recognised and approved by the Danish governor, Colonel Bie, and that they would enjoy adequate protection in their missionary labours; the town of

Serampore and surrounding country were also more populous than the vicinity of Malda, and afforded better accommodation and greater facilities for printing the sacred scriptures in the native languages. The mission family, upon its establishment at Serampore, consisted of the senior missionary, Mr Carey, with three younger assistants, Messrs. Ward, Marshman, and Fountain, then recently arrived from England, together with their wives and children. A school for children and youth was immediately opened, and preaching commenced; the missionaries supplying both departments of service in rotation. A printing press was also established with the consent of the governor, and under a condition that it should be confined in its operations to the printing of philological works and the scriptures in the native languages; and an edition of the scriptures in the Bengalee language was immediately commenced with the aid of types from Europe.

In 1801, Mr Carey's success in the study of the vernacular languages of India recommended him to the professorship of the Sanskrit, Bengalee and Mahratta languages at Fort William. This appointment operated very favourably for the interests of the mission, by securing for the missionaries the avowed protection, and, to a certain extent, the patronage of the government, and by furnishing the professor with more ample pecuniary means, a large portion of which he conscientiously devoted for its support.

In 1805, Mr Carey published his grammar of the Mahratta language, and in the same year opened a mission chapel in the Loll bazaar in Calcutta; but in the following year, while Sir George Barlow held provisionally charge of the government of India, the Vellore mutiny occurred, supposed to have been occasioned by the apprehension of the native troops lest the Company should determine to pursue a system of *forcible proselytism*. This event so alarmed the Bengal council that orders were issued for the discontinuance, for a time at least, of all missionary exertions. The proceedings in India consequent on the Vellore mutiny led, of course, to agitation and discussion at home, in the court of directors, the court of proprietors, in parliament, and from the press; and terminated in the removal of much prejudice and many doubts, and in settling the public mind, so as finally to overcome all obstacles in this country to the discreet employment of means for the conversion of the heathen.

About the year 1805, Mr Carey received from one of the British universities a diploma as doctor of divinity, and in the following year was elected a member of the Asiatic Society of Calcutta. From this period to the close of his earthly career, the mission over which Mr Carey presided appears to have been almost uniformly prosperous.

In 1814, the missionaries had twenty stations in India, at which the distribution of religious tracts and the sacred scriptures, together with the education of children, and at some of them preaching, were constantly carried on.

In the following year, 1815, the new charter act of 1813, which had made express provision for the moral improvement of the natives of India, came into operation, and not only gave a legal sanction to the exertions of the missionaries, as schoolmasters or teachers, but provided funds which were directed towards the same end, so far, at least, as to the education of the natives.

In the department of philology, Dr Carey's labours were great; his Mahratta Grammar, already mentioned, was followed by a Sanskrit Grammar, 4to., in 1806; a Mahratta Dictionary, 8vo., in 1810; a Punjabee Grammar, 8vo., in 1812; a Telinga Grammar, 8vo., in 1814; also between the years 1806 and 1810 he published the Raymayana, in the original text, carefully collated with the most authentic MSS. in three volumes 4to. His philological works of a later date, are a Bengalee Dictionary in three vols. 4to., 1818, of which a second edition was published in 1825; and another in 8vo. in 1827—1830; a Bhotanta Dictionary, 4to., 1826; also a Grammar of the same language, edited by him and Dr Marshman. He had also prepared a Dictionary of the Sanskrit, which was nearly completed, when a fire broke out in Serampore and burnt down the printing office, destroying the impression, together with the copy, and other property.

The versions of the sacred scriptures which have issued from the Serampore press, and in the preparation of which Dr Carey took an active and laborious part, are numerous. They are in the following languages: — Sanskrit, Hindee, Brij-Bhassa, Mahratta, Bengalee, Orissa or Ooriya, Telinga, Kurnata, Maldivian, Gujurattee, Buloshee, Pushtoo, Punjabee or Shekh, Kashmeer, Assam, Burman, Pali or Magudha, Tamul, Cingalese, Armenian, Malay, Hindostanee, and Persian; to which must be added the Chinese. Dr Carey lived to see the sacred text, chiefly by his instrumentality, translated into the vernacular dialects of more than forty different tribes, and thus made accessible to nearly 200,000,000 of human beings, exclusive of the Chinese empire, in which the labours of the Serampore missionaries have been in some measure superseded by those of Dr Morrison.

But extensive as was the range which this ample field of science presented to the mind of Dr Carey, and necessarily indefatigable as must have been his exertions in the cultivation of it, it did not satisfy the ardour of his genius, which sought in the science of botany another field, unquestionably a delightful one, whereon to exhaust his mental energies. To the study of botany he appears to have given much attention, and to have corresponded with the botanical societies in Europe, assisting their exertions, and receiving in return similar assistance in his own, by the transfer of seeds from one country to the other. Dr Carey has also left behind him a report on the agriculture of Dinagepore, in the tenth volume of the Asiatic Researches; and a catalogue of Indian medicinal plants and drugs in the eleventh volume, under the name of Dr Fleming. But his principal service to the science of botany, and his last work, was the editing of his deceased friend Dr Roxburgh's *Flora Medica*, in three vols. 8vo.

The year 1834 terminated the labours of this excellent man. His health had been declining for several years, when, in September, 1833, a stroke of apoplexy prostrated his remaining energies, and led his friends to anticipate his speedy removal. Through the hot season of 1834 he was confined to his bed in a state of great helplessness, till at length, on Monday, June 9, he died. He was thrice married, and had several children. By his will he renounced all right to the property or premises of the Baptist Missionary Society at Serampore; or to those of his wife, Grace Carey, amounting to 25,000 rupees, more or less, which had

been settled upon her. His museum, with mineral collections, and some valuable books, he bequeaths to the college of Serampore, and some legacies to his sons and books to his wife, whom he constituted his residuary legatee.

CARISBROOK CASTLE, in the isle of Wight. This castle appears, by Domesday-book, to have been built by William Fitz-Osborne, Earl of Hereford, and the first lord of the island, soon after the Norman conquest. It stands on a small hill south-west of the town of Newport, and overlooking the village of Carisbrook. The walls of the original fortress cover about an acre and a half; these are surrounded by a more modern fortification, faced with stone, of an irregular pentagonal form, defended by five bastions; these outworks, which are in circuit about three quarters of a mile, and encompassed by a deep ditch, include in the whole about twenty acres: they were added in the time of queen Elizabeth, and are said to have been constructed upon the same plan as the fortifications of Antwerp, and by the same engineer, Genebella, an Italian.

Carisbrook Castle is memorable as a prison of Charles I. That unhappy monarch, having first fled to it for refuge, was treacherously detained there by the parliament, from November 1647 to September in the following year, and the narrative of his several unsuccessful attempts to escape from it forms an interesting episode in English history.

CARLINGFORD; a small sea-port town of Ireland, in the parish of the same name, in the barony of Lower Dundalk, in the county of Louth, and the province of Leinster. It stands at the foot of an extensive range of mountains, and on the south-eastern side of the spacious and beautiful inlet, called Carlingford bay; it lies to the north of Duhlin, at a distance of seventy-five miles. The origin of the town is commonly traced to the erection of the castle, whose ruins form so conspicuous a feature of the place at the present day. This edifice, which is called Carlingford castle and King's castle, is generally said to have been built by order of king John, when he was in this kingdom, about the year 1210. It was an important station during the early ages of the English dominion in Ireland; and although it was never regularly fortified, or even surrounded by a wall, it was a place of strength, from the circumstance of every house of any importance in it being a small fortress or castle, fully capable of resisting a sudden attack. Its position upon the frontiers of the English pale necessarily exposed it to frequent dangers.

On the southern side of the town, or that opposite to the side on which the castle stands, are the ruins of a Dominican monastery, of the date, as is generally supposed, of the fourteenth century; a religious house of that order was established here by Richard de Burgh, earl of Ulster, in the year 1305. Population of the town, 1300; of the parish nearly, 10,000.

Upwards of 2000 hands are engaged in the fishery; the oysters taken at Carlingford are celebrated for their delicious flavour, even in the metropolis of Ireland. The water in the extensive bay is deep, but unfortunately the entrance is obstructed by hidden rocks, which render the navigation dangerous for vessels even of moderate size; the linen and butter which the town exports are thus conveyed in small craft entirely.

CAROLAN; a native Irish lyric poet and harper, very popular in the recollections of his countrymen. His full name was Turlogh O'Carolan, and he was born in the year 1670, at Newton, near the village of Nodder, in the county of Westmeath. He boasted of ancient Milesian descent; but the land on which he was born had been wrested from his ancestors by the family of the Nugents, on their arrival in Ireland, with king Henry II. His father was a poor farmer, the humble proprietor of a few acres, which afforded him a scanty subsistence. According to one account, somewhat too marvellous, perhaps, to be strictly true, Carolan evinced no marks of talent till his eighteenth year, when he entirely lost his eyesight by small-pox. The thoughts which had hitherto wandered over the external world, were then turned inwards, and he became pensive and meditative. Near his father's house, there was an artificial mount, called in Ireland a *mote* or *rath*, one of the numerous remains of early fortifications still scattered over the island, or perhaps a seat of justice in primeval times. On this place, which the country people in latter times supposed to contain a fairy palace, the poor boy had been accustomed, while possessed of eyesight, to play with his companions. Now, when unable to join in their sports, he used to cause himself to be led out to it, and would there stretch himself for hours under the genial rays of the sun. While thus solitarily reposing, he would be observed to start up suddenly, as if under the influence of some access of enthusiasm. His friends could assign no better explanation for his conduct, than that he was visited occasionally with preternatural visions, through the influence of the fairy queen. In one of these raptures he called hastily to his companions to lead him home; and when he reached the house, he sat down immediately to his harp, and in a little time played and sang the air and words of a sweet little song addressed to Bridget Cruise, who had already become the object of his tenderest regards. So sudden is said to have been this visit of the muses, and so captivating was its product, that the people firmly believed him to have been at that moment gifted with poetic and musical power by the fairies; and they still keep in remembrance the spot where he desired, on this occasion, to be led home.

A memoir, less striking, but more probable, states that Carolan lost his eyesight at an earlier period of life, and that he endured the bereavement with cheerfulness, saying, "My eyes are transplanted into my ears." It also states that his musical genius was soon discovered, and procured him many friends, who determined to aid its cultivation; and at the age of twelve, a master was engaged to instruct him on the harp. "His diligence in the regular modes of instruction," says this memoir, "was not great; yet his harp was rarely unstrung; his intuitive genius assisting him in composition, whilst his fingers wandered amongst the strings, in search of melody." His love for Bridget Cruise not being successful, he married Mary Maguire, of the county of Fermanagh, who proved proud and extravagant, but never lost his affections. On entering the connubial state, he fixed his residence on a small farm near Moshill, in the county of Leitrim. Here he built a small house, in which he practised hospitality on a scale more suited to his mind than to his means; so that, in no long time, he was thrown nearly destitute upon the world.

The trade of the wandering minstrel, or bard, had long ceased in Ireland, but the forms of society

which it suited had not altogether been superseded. The Irish gentry, and many beneath that rank, had still leisure to be amused by, and liberality to reward, the talents of the musician and the poet. Carolan was eminently both. His songs were already widely famed. His manners and conversation were also of a pleasing character. He therefore found no difficulty in commencing the erratic life which he persevered in to the close of his days. It must not be supposed that he appeared as an ordinary mendicant. He was invited as a friend to live with those who were pleased to patronise him; and in general there was a competition among the gentry of Connaught for the honour of entertaining him. It is recorded that messengers would sometime be in pursuit of him for several days from place to place, to obtain the honour of a visit from the blind harper. In many instances he signified his gratitude by composing a song in honour of his host, or of some interesting member of the family. He is said to have in all composed about two hundred airs, to the most of which he gave verses. His compositions have all the wild grace and pathos which characterise Celtic music and poetry, and which shine so peculiarly in the melodies of Ireland.

Carolan was so unfortunate as to contract, in early life, a love of whisky, which greatly increased as he advanced in years. In his latter days he never composed without a bottle by his side, being of opinion that it was necessary to stimulate or awake his powers.

Carolan died in the month of March 1738, when he had attained his sixty-eighth year. He was interred in the parish churchyard of Kilronan, in the diocese of Ardagh, his funeral being attended by sixty clergymen of different denominations, a number of gentlemen from the neighbouring counties, and a vast concourse of country people, who, rude as they were, had often enjoyed the strains of their national bard.

CARR, Sir John, a writer of travel or tours, which obtained some notoriety in their day, was a native of Devonshire. He was bred to the law, which he practised at the Middle Temple; and at first had recourse to travel on account of ill health. His first publication was "The Fury of Discord, a poem," printed in 1803, in 4to. His "Stranger in France, a Tour from Devonshire to Paris," written in the same year, when the world was greedy for information respecting the character and manners of a people changed by the events of a revolution, and again after a brief peace severed from our intercourse by war, was read with avidity. The light and rapid sketches, the spirit and gentlemanly feeling which characterised his observations, led to his recurring to that branch of literature, which gratified the public whilst it benefited himself and his publisher. In the interval he published, in 1804, "The Sea-side Hero, a drama in three acts," the scene of which was laid in Sussex, on the supposed attack of the anticipated invasion; and in 1805 appeared "A northern Summer, or Travels round the Baltic, through Denmark, Sweden, Russia, part of Poland, and Prussia, in 1804." In 1806, appeared "The Stranger in Ireland; or a Tour in the Southern and Western Parts of that Country in 1805;" soon after, the author was knighted by the duke of Bedford, then viceroy. In 1807, he published "A Tour through Holland, along the Right and Left Banks of the Rhine to the South of Germany in 1806." The frequency of his productions now began to elicit remarks; and one Mr Edward Dubois ventured to satirize his trade in tours, in a little 12mo book entitled "My Pocket Book; or Hints for a Ryghte Merrie and Conceitede Tour, in 4to., to be called 'The Stranger in Ireland, in 1805.' By a Knight Errant," dedicated to the paper-makers. For this publication the booksellers were prosecuted in 1809. It appeared on the trial that Sir John Carr had received for the copyright of his Stranger in France, £100; for the "Northern Summer," £500; for the "Stranger in Ireland," £700; and for the "Tour in Holland," £600. Sir John failed in obtaining a verdict; the jury considering that "My Pocket Book" contained no personal reflection on the knight, unconnected with his writings; and in consequence his *cacoethes itinerandi* received a certain check. However, he published about the same time a work he had before in preparation, "Caledonian Sketches, or a Tour through Scotland in 1807;" and in 1811, "Descriptive Travels in the Southern and Eastern parts of Spain and the Balearic Isles (Majorca and Minorca), in the year 1809," both in quarto. In 1809 he printed a volume of Poems, in quarto and octavo, to which his portrait was prefixed. Sir John died in London, July 17, 1832, aged sixty. The Edinburgh Review, in criticising some of his tours, indulged in an Irish pun, and called him *a jaunting car*. It is but justice, however, to say that the light, cheerful character of Sir John Carr's writings was harmless, and that a lively and gentlemanly feeling pervaded his volumes. The plates which accompanied his Tours were creditable to his pencil.

CARRIAGES. Wheel carriages for pleasure are generally supposed to have first come into use in England in the reign of queen Elizabeth. But long before that time, carriages of some kind were used on state occasions, or for the conveyance of sick persons. Even in the time of the Saxons, a clumsy kind of car, upon four wheels, was employed to carry great personages; and Stow tells us, that during Wat Tyler's insurrection in 1380, Richard II., "being threatened by the rebels of Kent, rode from the Tower of London to the Miles End; and with him his mother, because she was sick and weak, in a *whirlicote*," which is supposed to have been a sort of covered carriage. "Chariots covered, with ladies therein," followed the litter in which queen Catharine was carried to her coronation with Henry VIII. But queen Elizabeth's is the first that is called a *coach*. In 1564, William Boonen, a Dutchman, became the queen's coachman, and about this time coaches were brought into general use in England. In 1588, queen Elizabeth went from Somerset House to Paul's Cross to hear return thanks on the destruction of the Spanish armada, in a coach presented to her by Henry earl of Arundel.

These coaches must have been clumsy uncomfortable machines. They had no springs; and the state of the streets and roads must have made travelling in them any thing but easy. But fashion soon brought them into such general use, that in 1607, Dekker complains that "the wife of every citizen must be jolted now." And in 1636, there were 6,000 of them kept in London and the neighbourhood.

At first they had only two horses, but afterwards the number was increased. In the reign of James I., "the stout old earl of Northumberland,

when he was got loose, hearing that the great favourite Buckingham was drawn about with a coach and six horses, thought he might very well have eight in his coach, with which he rode through the city of London, to the vulgar talk and admiration."

In general, however, it was thought disgraceful in those times for the male sex to ride in coaches. "In Sir Philip Sidney's days, so famous for men at armes, it was then," says Aubrey, "held as great a disgrace for a young gentleman to be seen riding in the streets in a coach, as it would now for such a one to be seen in the streets in a petticoat and waistcoat! so much is the fashion of the times altered."

Sir Walter Scott says, that it is a tradition in Scotland, that chaises or chariots were first introduced into that country in 1745. Before that time, the nobility were accustomed to travel in vehicles somewhat resembling Noah's ark, and the gentry on horseback; but in that memorable year, the prince of Hesse appeared in a carriage of this description, "to the admiration of all Scotchmen, who regarded it as a coach cut in half."

When we compare the clumsy things in which even our kings formerly rode, with the convenient and elegant carriages of the present day, we cannot help admiring the progress which our workmen have made in this and every other branch of art.

CARRICK-ON-SUIR; a market-town of Ireland, in the county of Tipperary, thirteen miles from Waterford, and seventy-eight from Dublin. It is situated on the north bank of the river Suir, and consists of one long street extending in a direction from east to west, from which several smaller ones diverge. The trade of the place consists principally in the sale of agricultural produce and provisions, which are sent to Waterford for exportation, and to Clonmel for the supply of that town and neighbourhood. The market is on Saturday. Population of town, 6922; of parish, including town, 7445.

CARRIER-PIGEONS, (*a.*) The Carrier-Pigeon is distinguished by a broad circle of white skin round each eye, and by the dark-bluish colour of its plumage. It will convey letters from distant parts with remarkable celerity and certainty; and this arises from the natural attachment which the birds have for the places where they have been bred. The mode of employing them is to take them to the spot whence intelligence is to be brought, to tie the letter under their wing, and to let them loose. They rise to a great height in the air, then, by an extraordinary instinct, they dart onward in a direct line to their home. Out of one hundred and ten pigeons brought from Brussels to London, in the summer of 1830, and let fly from London, July 19, at a quarter before nine, A.M., one reached Antwerp, 186 miles distance, at eighteen minutes past two, or in five hours and a half, being at the rate of nearly thirty-four miles an hour. Five more reached it within eight minutes after. Thirteen others took two hours and a half more for the journey, or eight hours in the whole. Another pigeon went from London to Maestricht, 260 miles, in six hours and a quarter. In January, 1831, two pigeons, brought from Liskeard to London, were let fly from London to Cornwall. One reached Liskeard, 120 miles' distance, in six hours, the other in a quarter of an hour more.

CARRINGTON, N. T., a very pleasing descriptive poet, was born at Plymouth, in the year 1777. His parents were engaged in a retail grocery business, and, at one period of their lives, were possessed of considerable property. His father was also employed, in some capacity, in the Plymouth Arsenal. When he had attained his fifteenth year, his father apprenticed him to a measurer in Plymouth Dock. "I was totally unfit (he himself says) for the profession. Mild and meek by nature, fond of literary pursuits, and inordinately attached to reading, it is strange that a mechanical profession should have been chosen for me. It was principally, however, my own fault. My father was attached to the dock-yard, and wished to see me in it; and, as the popular prejudice in those days among the boys of the town was in favour of the business of a shipwright, I was carried away by the prevailing mania, and was, accordingly, bound apprentice. This, however, had scarcely been done when I repented; and, too late, found that I had embraced a calling foreign to my inclinations. Dissatisfaction followed, and the noise and bustle of a dock-yard were but ill suited to a mind predisposed to reflection, and the quietest and most gentle pursuits. The *ruffianism* (I will not change the term) of too many of the apprentices, and, indeed, of too many of the men, sickened me. Let no parent place his child in the dock-yard at Plymouth, unless he have previously ascertained that his health, strength, personal courage, and general habits of thinking and acting, will make him a match for the desperate spirits with whom he will have to contend." After remaining at the Dock about four years, he resolved on "running away;" having in vain endeavoured to prevail on his parents to place him in a situation more consonant with his favourite pursuits. On leaving the dock-yard, not knowing whither to turn his steps, he entered himself as a seaman on board a ship of war, and served in the action which took place off Cape Finisterre, February 14th, 1797. His first verses on record were written in commemoration of this event; they attracted the notice of his captain, who, perceiving that he deserved a better situation, and that some very untoward circumstances must have occurred to induce him to seek this line of life, gave him his liberty, and sent him home to his native town. He then commenced the business of a public teacher at Plymouth Dock (now Devonport), and speedily attracted considerable attention by his acuteness in his modes of instruction. It should be here observed, that Mr Carrington was indebted entirely to his intense love of reading and research for the knowledge which he possessed; and he was often heard to remark that he recollected having learned nothing of consequence at school with the exception of reading, writing, and arithmetic, and the elements of English grammar. He subsequently went to Maidstone, in Kent, where he opened school. He remained in that town about three years; and it may be observed that, in after life, he frequently dwelt with great delight on his recollections of Maidstone.

At the solicitations of a circle of friends at Plymouth Dock, who wished him to undertake the education of their sons, he returned in 1808 to that town, after a residence in Maidstone of about two years; and the academy which he then established he continued to conduct till within six months of his death, being a period of twenty-two years of unceasing toil. This long course of si-

iently discharged duty presents none of those points of inciting interest which occur in the lives of men of more precarious and more stirring fortunes. During nearly the whole of the above-named period, Mr Carrington was employed, in his laborious duties as a public teacher, from seven in the morning in the summer till half-past seven in the evening: in the winter his labours commenced at nine in the morning, and continued till eight at night. It was after this hour that he found his only opportunities of cultivating the taste for literature with which he had been gifted by nature.

The first edition of his poem, entitled "Banks of Tamar," appeared in 1820. He had, previously to the printing of this work, published many little fugitive poems of great beauty, and which attracted much attention, particularly in Devonshire, where the author was best known. He next published "Dartmoor, a descriptive poem," the first edition of which appeared in 1826. This poem was written for the purpose of being submitted for the premium offered about two years before, for the best poem on that subject, by the Royal Society of Literature. By some accident, the premium was awarded three or four months before Mr Carrington was aware that the time of presentation had arrived. It is needless to say, that his poem was not forwarded to the Society; the author threw it by, without entertaining the slightest intention of ever publishing an effusion on what he imagined the bulk of the reading public would think a most unpromising subject. By some chance, however, the poem came under the notice of W. Burt, Esq., secretary of the Plymouth chamber of commerce, who persuaded Mr Carrington to publish it; and it accordingly appeared, with explanatory notes by that gentleman. "Dartmoor" met with far greater success than the author had ever dared to anticipate. It was received with much delight by the public; it was very highly spoken of by the periodical press; and the consequence was, that a second edition was called for not more than two months after the appearance of the first. Two or three years before the publication of "Dartmoor," the town of Devonport was seized with an unaccountable mania for subscription schools; by the establishment of the first of these academies, Mr Carrington's prosperity, in common with that of several other public teachers residing in the town, was materially injured. He still, however, struggled on; though the circumstances of his having a large family dependent on his exertions rendered the decrease of income, caused by the subscription schools, to be very severely felt by him. Towards the close of 1827 he was attacked by incipient consumption; and in a few months it was apparent that the disease would inevitably be fatal. He still, however, attended unceasingly to his school; and although reduced to a mere skeleton, and weak as an infant, he continued to discharge his scholastic duties till March, 1830,—a period of nearly three years,—when he became so completely worn out, by the inroads of the deadly complaint with which he was afflicted, that he was obliged to cease all further efforts. It was during his illness, that Mr Carrington wrote and prepared for the press his last publication—"My Native Village; and other poems." In "My Native Village," he frequently alludes, in affecting terms, to the painful nature of his situation. In July, 1830, he removed with his family to Bath, in order to reside with his son, who about that time had become proprietor of the Bath Chronicle. By this time he was in the most advanced stage of consumption; he daily grew weaker and weaker; and on the evening of the 2d of September, 1830, he expired, apparently of mere weakness and exhaustion. As he always expressed the utmost horror of being buried in any of the "great charnel-houses of Bath" (as he used to term the burial grounds of that populous city), he was interred at Combhay, a lonely and beautiful little village about four miles from Bath.

CARTLAND CRAGS, a rugged and bushy ravine in the immediate neighbourhood of Lanark, Scotland, formed by the course of a little stream called the Mouse water, and in the recesses of which Sir William Wallace more than once took refuge while making reprisals on the English invaders under Edward. A particular cave is still shown, half-way up one of the banks, as a hiding-place of this illustrious personage. At the lower part, near the confluence of the Mouse with the Clyde, the road from Lanark to Glasgow passes over the profound chasm by a modern bridge. This bridge, which was designed by the late Thomas Telford, was commenced in 1822, and finished in little more than a year. It consists of two piers, of the height of 130 feet, forming three arches, with a perfectly level road on the top, spanning a defile of at least 150 feet in width.

CASHEL; a town of Ireland, in the county of Tipperary, situated on the road from Dublin to Cork, twelve miles from Clonmel, and seventy-five from Dublin. It consists of one principal street, from which several others diverge irregularly. The principal trade of the place consists in the sale of the produce of the surrounding country. Cashel is the seat of an archbishopric and diocese, and hence may lay claim to the title of city. The ruins of ecclesiastical establishments in different parts of the town, and on the Rock of Cashel, are highly interesting. Population of town, 6971; within the corporate lands, 12,582.

CASHEW. The Cashew or Firework Nut is about the size and nearly the shape of a Windsor bean, and is occasionally imported into this country from the West Indies, where it forms an economical source of amusement to the native children, who put it on the end of a long wire, or sharp stick, and then set it on fire, by holding it for half a minute over a flame. The nut contains a quantity of oil, and gives out a succession of vivid minute streams of fire and smoke, until the husk of the nut is burnt to a cinder. It is then easily opened, the kernel is found properly roasted, and it is eaten like an almond, to which, by many, it is thought superior in flavour.

CASSAS, Louis Francois; an eminent architectural artist, was born June 3, 1756, at Azay-le-Feron; and after sedulously employing his youth in studying and delineating the antiquities of Sicily, Istria, and Dalmatia, accompanied to Constantinople, Choiseul Gouffier, by whom he was selected to make drawings for the continuation of his *Voyage dans la Grèce*. Shortly after he visited the opposite shores with M. Lechwallier, the author of the classical *Voyage de la Troade*. As soon as he had finished examining the region immortalised by Homer, he proceeded to Balbec and Palmyra, whose superb remains were then known to Europe only by Wood's publication. About the commencement of the Revolution he returned to France, laden with the interesting stores he had

collected during so many years of unremitted application; and the treasures of his portfolio attracted the curiosity, and obtained for him the admiration, of every lover of the fine arts and antiquity. His *Voyage d' Istrie et de Dalmatie*, by dispersing copies of his labours, rendered his name familiar to the artists of other countries. The extensive sale of his other work, *Voyage en Syrie et en Phénicie*, by occupying his pencil, prevented its completion, for although thirty parts appeared, it was left unfinished. In addition to these valuable labours, M. Cassas employed many years and considerable sums of money in forming a collection of architectural models in almost every style, which, with singular disinterestedness, he gave up to the imperial government for a trifling life-annuity. This highly interesting and valuable collection is now deposited in the Palais de l'Institut, until such time as a place shall be provided for it at the new Ecole des Beaux-Arts. M. Cassas died suddenly at Versailles, of a stroke of apoplexy, on the 1st of November, 1827, in the seventy-second year of his age.

CASTLEBAR; a town of Ireland, in the county of Mayo, forty-four miles from Sligo, and 125 from Dublin. It boasts of a handsome new church, a county jail, and extensive barracks. The linen manufacture is carried on here, but not so extensively as formerly. Its market-days, (Saturdays) are distinguished by a considerable trade in corn and other agricultural produce. Population, 6373.

CASTLETON; a village in Derbyshire, 164 miles from London and twenty-seven S. E. from Manchester; situated at the bottom of a steep eminence, whose summit is crowned by an ancient castle that gives name to the place. The castle was erected by William Peveril, natural son of the Conqueror, and from its situation was called "the Castle of the Peak," or "Peak Castle:" the extent of the ruins evinces the former magnitude of the building; they are to be approached only from the north, and that with difficulty. The entrance of the Peak Cavern, or *Devil's Cave*, at the base of the steep, is 120 feet in width, 42 in height, and above 90 in receding depth; from hence a gentle descent conducts the visitor to the interior of this tremendous hollow, which must be explored by torch-light; the entire length of the excavation is 750 yards, and its depth from the surface of the mountain 207. The houses of the village are chiefly of stone; the support of the inhabitants is derived from the mining business, and from strangers visiting the remarkable places in this district; together with the manufacture and sale of various ornamental articles formed from spar, which is hereabout obtained in great variety and beauty: the mine of fluor spar, or "Blue John," is the only one of the kind in England, and its produce is worked into chimney and other ornaments, slabs, table tops, &c. Population of the parish of Castleton, 1329.

CAVALRY, (*a.*) Asia appears to have furnished Europe with the model for cavalry, which, according to Herodotus, received its first formation in the east, from Cyaxares, king of Media. Before his time, footmen and horsemen were promiscuously embodied; but preparatory to the siege of Nineveh, he sorted this motley band and divided each particular force into separate companies. Cyrus the elder is the next conspicuous organizer of cavalry; he appears, however, to have been more struck by the power of plundering, which an army acquired from such a force, than by its utility in the field: for, if Xenophon is to be believed, his proposition for the Persians to raise a body of horse was immediately caused by seeing the Median and Hyrcanian cavalry returning to the camp laden with booty. The Scythians, who possessed Asia for twenty-eight years, fought almost entirely on horseback: like the modern Cossacks, they were particularly successful in irregular warfare, and when Darius invaded their country, never failed to drive back the Persian cavalry. It is remarkable, that even at this early period of tactics, the superiority of infantry over cavalry was strongly evinced. "The Scythians," says Herodotus, "notwithstanding their advantage over the Persian horse, always retreated from the foot." Under Darius, the Persian cavalry progressively increased, and we find them at the battle of Marathon ten thousand strong —a force nearly equal to the whole Athenian army, which consisted exclusively of infantry. Miltiades, however, was well acquainted with the composition of the Persian troops; and knowing that their chief dependence was on this body of cavalry, he prudently attacked them in the narrow plain of Marathon, where they were so impeded by want of space, and so encumbered by their own numerous infantry, that they became unable to act, and were completely defeated by the gallant Greeks. The Persian cavalry were then armed with darts or arrows. Like the eastern cavalry of the present day, they generally attacked and harassed by successive small bodies, rapid in the advance and vehement in the onset, but when firmly resisted, equally rapid in retreat. The Athenian infantry again showed their excellence at Mount Cithæron, where a small number under Olympiodorus not only sustained but repelled the attacks of the whole cavalry of Mardonius. This cavalry, however, greatly and constantly harassed the Greeks previous to the battle of Platæa; and although in that battle the Persian horse totally failed in their attempts to break the Spartan phalanx, yet the Greeks perceived the advantage of so valuable an accessory, and after that period directed more attention to the improvement of their cavalry. Yet cavalry never formed any considerable portion of the Grecian armies. The Athenians and Spartans, the two most warlike states, were both badly provided with it; indeed, the latter absolutely despised such an assistant. The Thessalians, who inhabited a large plain, appear to have furnished the best horse amongst the Greeks: these, as well as the Eolians and Thracians, are stated to have been always employed by the kings of Macedon; but this force was small in proportion to the infantry, which always constituted the principal strength of the Grecian armies. No Asiatic cavalry would dare to charge the phalanx, and no Asiatic infantry could withstand its attacks. The retreat of the ten thousand was protected by not more than fifty horse; and with the assistance of this small number of indifferent cavalry, principally mounted upon baggage horses, Xenophon brought his army across the mountains and valleys of Asia, harassed by the Persian and barbarian cavalry. During their intestine wars, the Greeks appear to have paid more attention to the equipment and tactics of cavalry, the principal improvements in which were made by Epaminondas. At the battle of Leuctra, we find that the Theban horse were "carefully appointed, highly trained, and of considerable practice;"

and at Mantinea, both Theban, Thessalian, and Athenian, were severally distinguished, At Arbela, Alexander employed his Grecian cavalry with much success, defeating with them the Scythian and Bactrian horse, and throwing the whole Persian line into confusion; indeed, the Thessalian cavalry are stated to have mainly contributed to the glory of this day. However, generally speaking, the Grecian cavalry did not enjoy much consideration, and the victories of Alexander are more to be attributed to the resisting firmness of the Macedonian phalanx than to the more active bravery of the Thessalian horse. The Grecian cavalry were armed with the helmet, cuirass, shield, lance, and sword, and, after various modifications, were finally formed into troops of eight files and four ranks. The Romans imitated the Greeks in equipment, but inverted their order of formation, placing their *turmæ*, or troops of cavalry, in four files and eight ranks, thus diminishing the depth and increasing the mobility. The genius of Grecian tactics was *resistance;* that of the Roman, *attack.* The Roman cavaliers, like the modern dragoons, were taught to fight both on foot and on horseback, but in neither situation were they particularly distinguished. Hannibal's comparison of them to "horsemen having their feet and hands tied," is strongly illustrative of their inefficiency; and although the successes of the Carthaginian general may, in a great measure, be attributed to his superiority over his opponents in military skill, and the undisciplined state of the Roman militia in the second Punic war, yet it is evident that the active operations of the Numidian, and the contemptible condition of the Roman cavalry, enabled him more readily to take advantage of those errors which the republican generals so often committed.

The Romans, like the Greeks, placed their principal dependence in battle, upon their infantry; and in proportion as the cavalry was increased, did the glory and successes of the imperial army diminish. The cavalry was augmented under the last of the Cæsars, and the empire tottered. Men, little better than savages, with arms and physical force alone, subdued the most extensive and civilized empire of the universe; notwithstanding the discipline of her armies, and the number of her cavalry. After the subversion of the western empire, and the establishment of the Franks in Gaul, we find the invaders gradually increasing the number of their cavalry. At the battle of Tours, in 732, the French army consisted of sixty thousand foot and twelve thousand horse; and under Charlemagne and the second race of French monarchs, their armies were almost entirely composed of cavalry. These cavaliers carried defensive armour to a great extent; every remnant of mechanical art that survived in the midst of rudeness and barbarity, was employed to protect and arm the man and horse. The defenceless multitude shrunk before the "steel-clad cuirassier," and the feudal system, with all its aristocratical rights, and chivalrous influence, became established:—

> "For men-at-arms were here,
> Heavily sheathed in mail and plate,
> Like iron towers for strength and weight,
> With battle-axe and spear."

Cavalry constituted the principal strength of armies during the middle ages, and the honourable name of *miles* was confined to those only who served on horseback and were invested with the order of knighthood. The service of the infantry was degraded to a miserable and undisciplined populace; a charge of cavalry was irresistible; armies were alone formidable in proportion to the number of men-at-arms which they contained, and the undefended infantry became an easy conquest to their lordly foes.

As the comparative inefficiency of infantry became evident, a greater proportion of cavalry was employed; and armies, though better equipped and disciplined, were less numerous. This was the case in the early part of the fourteenth century, at which period the main exertion of every state was to obtain a predominating number of men-at-arms. These troops underwent various changes both in denomination and equipment. At the beginning of the fourteenth century, the cavalry of the European armies was divided into heavy and light horse; the men composing the former were called *men-at-arms*, those of the latter, *hobilers*. The men-at-arms were so called from their being armed *de cap-a-pied;* they were composed of the tenants *in capite*, (holding by military service,) or their substitutes (*servientes.*) The hobilers were so called from their riding little horses, termed hobbies; they consisted of the yeomen, and formed the light cavalry of the army. At the beginning of the fifteenth century, the men-at-arms were termed launcers, and the hobilers demi-launcers. At the close of the reign of James I., the heavy cavalry received the denomination of cavaliers, from the intercourse with Spain; and soon after that, of pistoliers from the peculiar weapon with which they were armed.

The defensive equipment of the man and horse appears to have progressively increased, until the introduction of plate-armour, in the fifteenth century, denoted its *ne plus ultra.* Now the man-at-arms, cased in entire steel, the several pieces firmly riveted, and proof against every stroke, his charger protected on the head, chest, and shoulder, fought with a security of success that could not be exceeded. The comparatively innocent effect of this excessive precaution is worthy of remark. Machiavelli relates, that at the battle of Zagonara, in 1423, only three persons lost their lives, and those not by the lance, sword, or battle-axe, but, by *suffocation in the mud.* At the battle of Molinella no one was killed. In an action between the Neapolitan and Papal troops, in 1486, not only no one was killed, but it could not be ascertained that any one was wounded. Philip de Comines relates an instance where a number of Italian knights were overthrown, but could not be slain until broke up, like huge lobsters, by the servants and followers of the army, each knight requiring three or four men, and as many woodcutter's axes, to despatch him. In fact, the art of defence had outstripped that of destruction; and, although in a charge many were unhorsed by the shock, yet the lance's point could not penetrate the breast-plate, the sword fell harmless upon the back-plate, the battle-axe was in vain uplifted against the helmet; and the conqueror, in the first impulse of his rage, was unable to reach any vital part of his prostrate enemy.

St Palaye attributes the decline of chivalry in France to the profusion with which the knightly order was lavished under Charles VI., the extension of the honour to lawyers and others of civil occupations, by Francis I., and the establishment of the *compagnies d'ordonnance*, in 1445, by Charles VII. The latter circumstance had, no doubt, important influence; it led to the formation of standing armies, and the employment of mercenary

troops; but the death-blow of chivalry was the invention of gunpowder: that event, and the general employment of fire-arms, by which it was progressively followed, form the important frontier of the ancient and modern art of war. The weapons of former warfare gradually lost their efficacy; physical force was reduced to a very subordinate place in the accomplishments of a soldier, and the coat of mail was no longer a security.

The *compagnies d'ordonnance* of Charles VII. consisted of nine thousand heavy, and seven thousand five hundred light cavalry. These troops may be considered as the foundation of regular cavalry, and, indeed, the first national standing army, except body-guards, which had been raised in any part of Europe. The heavy cavalry still preserved the costume of the men-at-arms; but a considerable change took place in the light cavalry, who appeared under the different denominations of arquebusiers, hussars, carabines, light-horse, &c. The arquebusiers were so called from the hargobus or arqucbus, a sort of short musket with which they were armed; the hussars from the Hungarian word *husz* (*i. e., twenty*) being raised in Hungary by an ordinance which required every *twentieth* man to take the field; the carabines, or carbineers, were something similar to the arquebusiers, and were attached to the regiments of light cavalry, in order to act as skirmishers. Of all the European cavalry, the *reiters* of the empire appear to have been the most distinguished. In the civil wars of France, and in the army of prince Maurice of Orange, these horsemen always constituted the principal and most efficient body of cavalry, and by means of their long pistols and dense formation carried destruction into the single ranks of the French and Spanish lancers. The employment of carbineers and arquebusiers, who sometimes fought on foot, and were frequently obliged to carry infantry behind them, led, at a later period, to the establishment of dragoons.

After the decline of chivalry, and the abandonment of defensive arms, the service of the infantry rose in estimation. The first organised body of foot, which proceeded from the feudal armies, was probably formed out of that monstrous multitude, which passed from Europe into Asia, in the train of the crusaders; but it was the Swiss patriots who restored the infantry to that place which it had held in the armies of Greece and Rome. The poverty of these simple peasants, and the small number of gentlemen residing in their barren and uncultivated country, rendered them unable to bring into the field any body of horse capable of resisting the heavy-armed cavalry of the Austrians, and they were, therefore, compelled to rest their whole dependence upon their infantry. The intrepidity and devotion of these troops rivalled that of the heroes of Lacedæmon. Instinctively adopting the principle of the Grecian phalanx, they formed themselves into dense battalions, presenting on every side so formidable a front of pikes, as to be perfectly impenetrable to the attacks of the Austrian cavaliers, who, after repeated efforts to overcome these martial peasants, thought it prudent to discontinue their attacks, and give up all attempts upon the liberties of the Swiss.* The Burgundian gendarmerie were equally unsuccessful as the Austrian; and the invincible Swiss infantry became so celebrated, that they were everywhere sought for, and employed. Their mutinous and insolent conduct, however, when acting as mercenaries, induced other states to form infantry for themselves, and the Spaniards very soon excelled their far-famed opponents. The Spanish infantry rendered their battalions much more formidable than those of the Swiss, by mixing fire-arms with their pikes; and, although sometimes broken by the lansquenets or German infantry, they were never thrown into disorder, but always returned individually to the charge. The reputation of the Spaniards lasted until the battle of Rocroi, when the decline of the monarchy brought on also that of their infantry, and the French infantry took the lead in Europe. Meantime, Gustavus Adolphus introduced a new system of tactics; the application of both infantry and cavalry became better understood; and the utility of amalgamating both arms appeared evident. By intermixing platoons of infantry with squadrons of cavalry, Gustavus was enabled to withstand the formidable Austrian cuirassiers at the battle of Leipsic; and the same practice was followed by Weimar and all the generals of the Swedish school.

From Gustavus Adolphus to Frederick the Great there was no inventor in the art of war: Louis XIV. certainly established *grenadiers à cheval;* and James II. horse-grenadiers. Charles XII. also rode two horses to death at a cavalry review; and some swarms of Turks appeared in Hungary; but no change occurred that is worth recording, in either the tactics or organization of cavalry. Frederick, however, infused new life into the whole military system. He increased the cuirassier's trot into a gallop, changed their heavy armour into a simple breastplate, reduced their formation to two deep, and, with the assistance of the great Seidlitz, brought the Prussian cavalry to a degree of perfection which they had never before attained. Since the time of Frederick, the tactics of cavalry have undergone little change; but in the arming of that force, two remarkable innovations have been introduced in the revival of the cuirass and lance.

The lance is not yet properly estimated in the British service. An imperfect knowledge of its capabilities, and an ill-founded prejudice against its use, have conspired to render the lance absolutely unpopular with our tacticians; and, perhaps, if a majority of opinions was now taken on the subject,

* The example of Wallace and Bruce, in their defence of Scotland against the splendid chivalry of the Plantagenets, had probably little influence on the continent; but in the history of those wars a complete and perfect parallel to that of Switzerland at this period is to be found. The old monkish rhyme, commonly called "The Bruce's Testament," may amuse the reader.

"Scotica sit guerra *Pedites*, mons, mossica terra;
Silvae pro muris sint, arcus, et hasta, securis;
Per loca stricta greges munientur: plana per ignes
Sic inflammentur, ut ab hostibus evacuentur;
Insidiæ vigiles sint, noctu vociferantes.
Sic male turbati redient velut ense fugati
Hostes pro certo—sic Rege docente Roberto."

A capital code, of which the following, the old Scotch version, is meritorious;

"On fut suld be all Scottes weire
Be byll and moss themself to weirre.
Let wood for wallis be; bow and spear
And battle-axe their fechting gear.
That enemies do tbaim na dreire
In strait places gar keip alle storre
And birnen the plane land them beforre
Than sall they pass away in haist
Quhen that they find nathing but waist
With wylles and awakenen of the nych
And meikle noyse made on hycht;
Than sall they turnen with gret affrai
Als they were chasit with swerd away:—
This is the counsell and intent
Of gud king Robert's Testament."

See Tytler's History of Scotland (vol. i., p. 475), a work in which the ancient military history of that country is, for the first time, handled with skill and effect.

it would be decreed, that a regiment of lancers was more ornamental than useful. The history, however, of all ages shows, that the lance is the most formidable and the most effective weapon that cavalry can be armed with. It was the distinguishing weapon of the days of chivalry; it was the principal arm of that cavalry whom nothing but the Swiss infantry could resist; and, in modern times, it has been most successfully employed in the French armies. The misapplication of the lance in our service is a sufficient proof of how little it is understood. That weapon is peculiarly adapted for *heavy cavalry*, and in the hands of light dragoons, upon light horses, is deprived of half its advantages. If the useless carbine, with its weighty appendages, was taken from our heavy cavalry, and a twelve-foot lance substituted, those troops would become, perhaps, the most formidable *line cavalry* in Europe. Both the *personnel* and *matériel* of the British cavalry qualify it in the highest degree for this description of force. The size, strength, and swiftness of the horse,—the weight, steadiness, and moral force of the man,—are qualities which should not be deprived of the means that would render them most effective.

Armour of any kind is highly objectionable for any cavalry. It is strange that armour should have been given to the British Life Guards immediately after they had proved its inefficiency,—after they, unaided by such defences, had torn the laurels of Waterloo from the cuirassiers of France. Armour must be a decided impediment to the efficiency of a dragoon on service. The enormous weight,—the constant clearing required,—the pain which its inflexibility must cause under fatigue, are circumstances which alone qualify its advantages in action. These advantages also have been much overrated; and perhaps it will one day be shown that the British Life Guards are more to be feared when their natural strength, weight, and activity are allowed full freedom of action, than when such qualities are constrained by the incumbrance of a cuirass. King James I. observed, in praise of armour, that it not only protected the wearer, but also prevented him from injuring any other person; and there can be no doubt that, however invulnerable a cuirass may render a cavalry soldier, his *active* properties are thereby much reduced.

It is strange, that eager as we are to avail ourselves of foreign fashions in our uniforms and equipments, we so often miss the point of utility. The hussar cap, for example, is, according to the real Hungarian form, an useful thing; the long triangular flap, which hangs down like a jelly-bag, consists of a double slip of cloth, which will fold round the soldier's face, and form a comfortable night-cap; but, in our service, one single slip is left to flap and dangle about the man's head, no great ornament by day, and totally useless by night. The hussar pelisse also, in its original form, was intended for a rational outside covering, but with us it is a mere appendage to the soldier's neck, which, on such occasions, seems but to perform the service of a clothes-peg. The British cavalry are certainly better provided both with *personnel* and *matériel* than any cavalry in Europe, perhaps than any cavalry in the world; but they are deficient in mobility,—not in direct movement,—for our horses have, probably, greater speed than any foreign cavalry,—but in that facility of manœuvre which enables large masses of cavalry to appear suddenly on that point in the field of battle where their assistance is required. It is in this locomotive property that the German cavalry so much excel us; they are also better officered, more watchful, more accustomed to act independently, and, therefore, better adapted for those peculiar operations of cavalry which come under the head of field service, or outpost duty. The leading quality of an English soldier, whether horse or foot, is *resistance*, the second is *direct attack*, and the operations of a skirmisher, or hussar, are entirely foreign to his natural propensities.

CHALK FORMATION. Chalk forms the last of the series commonly ranked in the secondary strata, and rests upon the greensand beds, which consist of a loose silicious sand, mixed with green earth and silicious concretions, hornstone, and flint. Sometimes, however, chalk is found resting on the bias, red marl or some of the older secondary rocks. It extends over the south-eastern, and eastern counties of England, north of France, Germany, and north of Europe. It occurs in the north of Ireland, and a slight trace of it has been discovered in the north of Scotland. It is stratified, and varies from a thousand to a few feet in depth. Chalk is almost a pure carbonate of lime. It is in general soft and friable; although sometimes so hard as to be used as a building stone. Portions of chalk found in contact with the igneous rocks of the Giants' Causeway in Ireland, have been so acted on by heat, as to assume the form of marble. Numerous flint nodules are found in chalk, and these generally contain some organized substance, as a shell animal, or piece of flustra, as their nucleus. Their nodules are more numerous in the upper than in the lower beds. The organic remains found in chalk are numerous, and almost exclusively marine. The spatangus, and echinus, or sea urchin, are very common. Among the chambered shells are scaphites, hamites, turrilites, baculites; ammonites, belemnites, nautilites, zoophytes, spinges, and bivalve shells are also numerous. Spiral univalves are more rare. Marine fuci, and fossil wood, which has evidently been much drifted, are not uncommon. Chalk contains occasionally an admixture of magnesia, which imparts to it a brown spotted appearance. On the whole, the chalk beds appear to have been formed at the bottom of an ocean, probably by the disintegration of calcareous rocks, to a fine sand or powder, aided also by numerous minute crustacea and animalculæ, whose slender forms have recently been discovered in myriads in deposits of chalk, both marine and lacustrine. Chalk may also have owed its origin to a sudden precipitation from some chemical solution.

CHALMERS, Alexander, M. A., F. S. A., a very voluminous writer and compiler for the London booksellers, was born at Aberdeen, March 29, 1759, and was the youngest son of James Chalmers and Susanna Trail, daughter of the Rev. James Trail, minister at Montrose. His father was a printer at Aberdeen, who established the first newspaper known at Aberdeen; which, after his death in September, 1764, was carried on by his eldest son, and is now the property of his grandson, Mr David Chalmers. His grandfather, the Rev. James Chalmers, professor of divinity in the Marischal college, died, much regretted, October the 8th, 1744, aged fifty-eight. Having received a classical and medical education, about the year 1777 he left his native city, and, what is remarkable, he never returned to it. He had obtained the situation of surgeon in the West Indies, and

had arrived at Portsmouth to join his ship, when he suddenly altered his mind, and proceeded to the metropolis. He soon became connected with the periodical press. His literary career commenced as editor of the Public Ledger and London Packet. This was during the American war, when party spirit ran very high. At this period Mr Chalmers acquired considerable fame as a political writer. He also contributed to the other popular journals of the day. In the St James's Chronicle he wrote numerous essays, many of them under the signature of Senex. To the Morning Chronicle, the property of his friend, Mr Perry, he was for some years a valuable assistant. His contributions consisted of smart paragraphs, epigrams, and satirical poems. He was also at one time editor of the Morning Herald. Mr Chalmers was early connected in business with Mr George Robinson, the celebrated publisher, in Paternoster Row. He assisted him in judging of MSS. offered for publication, as well as occasionally fitting the same for the public eye. He was also a contributor to the Critical Review, then published by Mr Robinson, and to the Analytical Review, published by Mr Johnson. At this period he lived almost wholly with Mr Robinson; and, on his death, Mr Chalmers recorded his friendship for him by a memoir in the Gentleman's Magazine for June, 1801.

In 1793, he published a continuation of the History of England, in letters, 2 vols.;—2d edition, 1798; 3d edition, 1803; 4th edition, 1821. In 1797 he compiled a Glossary to Shakspeare; in 1798 a sketch of the isle of Wight; and published an edition of the Rev. James Barclay's complete and universal English Dictionary. In 1803 he edited "The British Essayists, with prefaces historical and biographical, and a General Index," 45 vols. This series begins with the Tatler, and ends with the Observer. The papers were collated with the original editions; and the prefaces give accounts of the works, and of the lives of such of the writers as are less generally known. Another edition of this work was called for in 1808; and it has since been reprinted. In 1803 he prepared an edition of Shakspeare, in 9 vols. 8vo., with an abridgement of the more copious notes of Steevens, and a life of Shakspeare. This edition was accompanied by plates from designs by H. Fuseli, Esq., R.A. Mr Chalmers took particular pains with the *text*, which is believed to be the most correct of any edition yet published: reprinted in 1812. In 1805 he wrote a Life of Burns, and a Life of Dr Beattie, prefixed to their respective works. In the same year he was elected a Fellow of the Society of Antiquaries. In 1806 he edith Fielding's works, 10 vols. 8vo.; Dr Johnson's works, 12 vols. 8vo.; Warton's Essays; the Tatler, Spectator, and Guardian, 14 vols. 8vo.; and assisted the Rev. W. Lisle Bowles in the publication of Pope's Works, 10 vols. 8vo. 1807. In 1807 he edited Gibbon's History, with a Life of the author, 12 vols. 8vo. In 1808, and following years, he prefixed prefaces to the greater part of the volumes of a collection, selected by himself, known as "Walker's Classics," from the name of their publisher. They consisted of 45 vols., and met with great encouragement. In 1809 he edited Bolinghroke's Works, 8 vols. 8vo.; and in this and subsequent years he contributed many of the lives to the magnificent volumes of the "British Gallery of contemporary Portraits," published by Cadell and Davies. These notices, though short, are authentic and valuable. In 1810 he revised an enlarged edition of "The Works of the English poets from Chaucer to Cowper, including the series edited, with prefaces, biographical and critical, by Dr Johnson, and the most approved translations. The additional Lives by Mr Chalmers." In 21 vols. royal 8vo. In the same year he published "A History of the Colleges, Halls, and Public Buildings attached to the University of Oxford, including the Lives of the Founders;" a work which he undertook at the request of his old friend Mr Cooke, the bookseller at Oxford, and from which he derived much pleasure. In 1811 he revised through the press bishop Hurd's edition of Addison's Works, 6 vols. 8vo., and an edition of Pope's Works in 8 vols. 18mo. In the same year he republished, with corrections and alterations, a periodical paper entitled "The Projector," 3 vols. 8vo. These essays were originally printed in the Gentleman's Magazine. They began in January, 1802, and were continued monthly to November, 1809. He had previously written a periodical paper, called "The Trifler," in the Aberdeen Magazine; but those essays were never printed separately. In 1812 he prefixed a life of Alexander Cruden to the sixth edition of his "Concordance."

But the work on which Mr Chalmers's fame as an author chiefly rests is "The General Biographical Dictionary." The first four volumes of this work were published monthly, commencing in May, 1812, and then a volume every alternate month, to the 32d and last volume in March, 1817, a period of four years and ten months of incessant labour and of many personal privations. Fortunately his health and spirits were wonderfully supported, and he was cheered during the progress of the work by the approbation of those whom it is desirable to please. Of the extent of Mr Chalmers's labours some idea may be collected from the following statement. The preceding edition of this Dictionary, 1798, was in 15 vols.; the present in 32 vols. It was augmented by 3934 additional lives; and of the remaining number 2176 were re-written, and the whole revised and corrected. The total number of articles exceed 9000. The general fidelity of Mr Chalmers's labours stands conspicuous and unimpeached; in each article the sources whence it is derived are pointed out; the works of authors are enumerated; and in proportioning the length of an article to the quality and interest of the subject, due consistency is observed.

In November, 1816, he republished "The Lives of Dr Edward Pocock, the celebrated orientalist, by Dr Twells, of Dr Zachary Pearce, bishop of Rochester, and of Dr Thomas Newton, bishop of Bristol, by themselves; and of the Rev. Philip Skelton, by Mr Burdy," in 2 vols. 8vo. In 1819 he published "County Biography," 4 numbers; and a life of Dr Paley, prefixed to his works. In 1820, he published "A Dictionary of the English language, abridged from the Rev. H. J. Todd's enlarged edition of Dr Johnson's Dictionary," 1 vol. 8vo. In 1822, he edited the ninth edition of Boswell's "Life of Johnson;" in 1823 a new edition of Shakspeare, and another edition of Dr Johnson's works.

Mr Chalmers was a valuable contributor to the Gentleman's Magazine, to which he was very partial, finding it of the greatest use in the compilation of his biographical works. With the late Mr John Nichols he was in the strictest bonds of friendship, rendered doubly pleasing by the simi-

larity of their literary pursuits. This friendship continued unabated till the death of Mr Nichols, when Mr Chalmers wrote a biography of him for the Gentleman's Magazine, December, 1826, which is one of the fullest and most pleasing memoirs which ever appeared of a long and laborious literary life. With most of the other principal printers and booksellers of London during the last fifty years, Mr Chalmers lived on terms of intimacy; and has frequently recorded his esteem for them in the obituary of the Gentleman's Magazine.

Mr Chalmers suffered much from illness during the last few years of his life. His death took place in Throgmorton Street, on the 10th of December, 1834. He was a warm and affectionate friend, and a delightful companion, being very convivial, and his conversation replete with both wit and information. He belonged to various literary clubs of the old school, of which he was nearly the last surviving member.

In 1783, Mr Chalmers married Elizabeth, the widow of Mr John Gillett. She died in June, 1816.

CHAMELEON MINERAL; a name given by the chemists of the 18th century to a mass produced by fusing oxide of manganese with nitre or with potash. It is of a dark green colour, and is soluble in water. The solution, at first green, soon passes through bottle green and purple to a deep red; and the red liquid may be again rendered green by the addition of caustic alcalies. These remarkable changes of colour have been shown to depend on the production of two acids, the manganesic and permanganesic; the former, which, with its salts, is green, being composed of manganese one atom, oxygen three atoms; and passing readily with separation of binoxide of manganese, into the latter, which is composed of manganese two atoms, oxygen seven atoms. The permanganesiate of potash may easily be obtained in permanent crystals of a bronze colour and metallic lustre, which give to water a splendid purplish red colour. This salt readily yields oxygen to organic substances, and has lately been used on this account in organic analysis.

CHAMIER, John, was born in London, about the year 1754, and placed at the Charter House on the foundation, at the age of ten years, having received a nomination from queen Charlotte, who had distinguished Mr Chamier's father, the Rev. John Des Champs (de Marsilly), with her particular favour from the earliest period of his quitting *her* native country, Mecklenburg, and settling in England. This worthy divine deserves, indeed, more than a passing notice. He commenced his career at Berlin, as chaplain to the queen of Prussia, and tutor to prince Henry, brother of the great Frederick, who by his harsh and unprincipled conduct, and by the sanction which he openly gave to infidel doctrines, drove him from the court. On his arrival in Great Britain, where his fame as a preacher had preceded him, he was immediately appointed minister of the Savoy chapel in the Strand, and afterwards presented to the living of Pillesden, Dorset. His works, which are very numerous, were written entirely in the French language, and consist chiefly of Sermons, "Ahrégé de la Religion Chrétienne," and "Cours de la Philosophie Wolfienne."

At the age of sixteen, Mr Chamier, instead of proceeding to the university, accepted a writership in India. There, from the year 1772 to 1805, he was employed in the civil service of the Company at Madras, and filled most of the principal situations in the political, revenue, and commercial branches, until at last he was appointed a member of the council at that presidency.

On his return to England, he settled in the parish of St George, Hanover Square, actively supported several of the public metropolitan institutions, became treasurer of St George's hospital, and served the office of church-warden with Lord Amherst in the year 1819. Mr Chamier retired early from the world, and confined himself for many years to the tranquil enjoyments afforded by a well-selected library, and a domestic circle devoted to his comfort and happiness. Mr Chamier never courted literary reputation; but he was tempted, at the solicitation of some scientific friends, to publish a Meteorological Journal about the year 1787, in one volume 4to, which has become exceedingly scarce. His epistolary style was a model of perfection—easy, elegant, and playfully satirical.

About 1781, he took, by royal licence and authority, the name and armorial bearings of his maternal uncle, Anthony Chamier, Esq. F. R. S., representative in several parliaments of the borough of Tamworth, and under secretary of state, who, dying in the year 1780 without children, left him sole heir of his property and estates. Mr Anthony Chamier was well known in the literary and fashionable circles of his day, and was one of the original members of Johnson's Literary Club. He lived on terms of intimacy with the great moralist; is often mentioned in Boswell's Life; and numbered amongst his friends Reynolds, Burke, Langton, Topham, Beauclerk, and Goldsmith.

Mr Chamier married Georgiana Grace, eldest daughter of Adm. Sir William Burnaby, Bart., and by her, who died May 14, 1826, left issue four sons and four daughters. He died at London, Feb. 23, 1831.

CHAPEL-EN-LE-FRITH; a market-town in Derbyshire, 167 miles, N. W. from London, and twenty S. E. from Manchester. Its name signifies the "Chapel in the Forest," from the Saxon word *frith*, a forest or wood—the church or chapel, which originated the town, having been built within the forest of the High Peak. The town is neat, and pleasantly situated on the declivity of a hill, rising from an extensive and fertile vale, surrounded by lofty eminences that bound this extremity of the county. The manufacture of cotton is the principal branch of business here. There is an establishment for warehousing goods, this place being a medium of communication between the large manufacturing towns of Manchester and Sheffield. Lead and coal mines, and lime-stone quarries, are worked in the neighbourhood; from the latter a railway communicates with the Peak Forest canal, which passes about three miles to the north-west. A large reservoir in the parish supplies the canal; it is a fine sheet of water, much frequented by anglers. Population in 1831, 3220.

CHARD; a town of Somersetshire, 140 miles W. S. W. from London. It is situated at the southern extremity of the county, on the highest ground between the north and south seas, a stream of water in the streets being divertible at pleasure into the English or the Bristol channel. The town consists chiefly of two streets, and a long row of houses called Crow Lane. It was constituted a borough in the reign of Edward I., and sent its re-

presentatives regularly to parliament till the 2nd of Edward III., when the privilege was withdrawn, and has not since been restored. Chard was the scene of battle between the partizans of Charles I. under Colonel Penruddock, and the parliamentarians, in which the former sustained a signal defeat. On Brown Down, in the neighbourhood of Chard, are several barrows, called Robin Hood's butts, which the vulgar maintain marked the distance to which Robin Hood and Little John were accustomed to throw their quoits. Population in 1831, 5141.

CHARLEVILLE, Right Hon. Charles William Bury, Earl of, was born June 30, 1764, the only child of John Bury, Esq., by Catharine, second daughter and co-heiress of Francis Sadlier, of Sopwell Hall, county Tipperary, Esq. He was advanced to the dignity of viscount Charleville by patent dated Dec. 29, 1800. He was elected one of the twenty-eight representative peers for Ireland on the first vacancy that occurred after the Union, by the death of Lord Rossmore in Aug. 1801; and was advanced to the earldom of Charleville by patent dated Feb. 16, 1806. During the rebellion in Ireland in 1799, his Lordship took an active part in its suppression. He commanded the Tullamore troop of cavalry, and two companies of infantry. His beautiful seat at Charleville Forest, King's county, was consumed by fire in 1808; and he afterwards erected a spacious mansion, in the castellated style, from the designs of Francis Johnston, Esq. The surrounding plantations are remarkably fine, and an artificial lake has been formed with the waters of the river Clodah. His Lordship was a classical scholar and an elegant writer, and wrote many learned papers on various subjects. He was held in high estimation among the literary and scientific men of Dublin, and for some years was president of the Royal Irish Academy. He was eminently distinguished for his high honour and unflinching integrity; and following the example of his ancestors for many generations, was a staunch supporter of the Protestant cause. In social life he was sincerely beloved. He died at Dover, Oct. 31, 1835.

The earl of Charleville married, June 4, 1798, Catharine Maria, only daughter and heiress of Thomas Townley Dawson, Esq., and widow of James Tisdall, Esq., and by her ladyship, he had his only son and heir—Charles William, now earl of Charleville.

CHATHAM, in Kent. (*a.*) Chatham appears to have derived its name from the Saxon words *cete*, a cottage, and *ham*, a town or village. It is situated on the south-east bank of the Medway, on the north side of Chatham hill, thirty miles S. E. from London. It adjoins the city of Rochester, and with Stroud, on the opposite side of the bridge, over the Medway, forms one continuous street, of upwards of two miles in length, locally called the "Three Towns." There was an extensive Roman station here: large quantities of remains, and many Roman graves, were discovered in excavating for the lines. The excellent fund, originally called the *Chest at Chatham*, (since removed to Greenwich and London,) was commenced by the advice of Sir Francis Drake and Sir John Hawkins, after the defeat of the Spanish armada in 1588, when queen Elizabeth assigned a small portion of the pay of every seaman, for the relief of those who had been wounded or disabled in the royal navy. An hospital was erected here for ten "poor decayed seamen and ship-wrights," by Sir John Hawkins, under royal charter, in 1592. There is also another hospital, capable of containing 400 patients, at Chatham; this structure is 350 feet in length, and was erected at a cost of £70,000. The population of the parishes of Chatham and Gillingham, according to the last census, amounted to 24,670.

During the war with France, in 1758, when the country was threatened with an invasion, the extensive fortifications called the *lines* were commenced, principally with a view to defend the dock-yard. The lines are strengthened by ramparts, palisadoes, and a broad deep ditch, and are further defended by a strong redoubt on the summit of the hill, towards the south-east. They embrace within their circumference, which extends for several miles, the whole of the naval establishments, the upper and lower barracks, the populous village of Brompton, and Chatham church. The barracks are very extensive; as independently of a large resident garrison of marines, this is one of the principal depots for troops destined for foreign service.

A dock-yard was commenced here early in the reign of Elizabeth, near the place where the gun wharf is now situated. It appears then to have consisted of one small dock, which, from its confined situation, and the increasing magnitude of the navy, it was found necessary, in the year 1622, to remove to the site of the present establishment. During the reign of Elizabeth, the fleet usually lay in the river Medway, and the queen seems to have fully appreciated the advantages of the situation, by ordering the erection of Upnor Castle, a fortification a little below the dock-yard, on the opposite bank of the river. Within the mouldering towers of this structure, (which is environed by a moat,) a magazine of gunpowder is kept for the use of the navy; but no guns have been mounted for its defence, for a considerable period. Upnor Castle has a small establishment under the command of a governor, who also commands the other forts for the defence of the Medway.

The arsenal was constructed at the conclusion of the first war with Holland, in the reign of Charles II., who also greatly improved and extended the dock-yard.

Chatham dock-yard is situated on the eastern bank of the river, immediately below Chatham, and, including the ordnance wharf, is about a mile in length. It is intersected with streets of storehouses and other buildings.

Amongst the objects most deserving of notice at Chatham dock-yard are the *Smitheries*, containing upwards of twenty forges, many of which are adapted for the construction of anchors of the largest size, which weigh five tons, are moved into and out of the fire by means of cranes, and are of the value of £360;—the *Rope-house*, 1140 feet in length, in which cables of 120 fathoms, and twenty-five inches in circumference, are made;—large *Store-house*, 220 yards long, and the *Sail-loft*, 209 feet. There are six slips for building ships, and four docks for their repair; an ordnance-wharf, on which the guns belonging to the various ships lying in ordinary, are systematically arranged in immense tiers, the cannon-balls being arranged in pyramids; various cranes, of great power; kilns, in which the planks necessary for curved forms, are steamed; pump-houses, saw-pits, and extensive ranges of artificers' work-shops; an anchor-wharf; a mast-house, 220 feet long, and 120 wide, for lay-

ing up masts and yards of the largest dimensions: several ponds, where the timbers to form the masts are kept constantly floating; spacious and handsome residences for the commissioner and principal officers in the yard; in short, every requisite and convenience for the purposes of so vast an establishment. But, notwithstanding the multiplicity of movements and processes continually going on, and the number of persons employed, there is no appearance of bustle or disorder; indeed, such is the state of discipline and perfection by which every thing is conducted, that it may be regarded as a sort of rational machine, worked by instinctive power, and set in motion by superior minds;—every man, every object, and each operation, seem tributary to that great floating citadel, and ever-changing home, a man-of-war.

The rapidity with which a ship can be fitted out in cases of emergency, is a striking illustration of this. Even early in the last century, a first-rate of 106 guns, which was ordered to be commissioned with great expedition for Sir Cloudesley Shovel, was completely fitted out in three days; she had previously been entirely unrigged, but her masts were raised, yards to, sails bent, and anchors and cables on board, at the conclusion of that short period, when she was enabled to drop down the Medway. Great as the celerity in this instance appears, the same equipment could now be effected in one-third less time. During the last war, nearly 4000 persons were employed in this dock-yard.

CHEADLE; a parish in the county-palatine of Chester. The township of Cheadle-Bulkeley, in this parish, is six miles from Manchester and three from Stockport. In the neighbourhood are several print works and bleaching-grounds. Population of parish in 1831, 8154.

CHEADLE; a market-town and parish in the county of Stafford. Tape is the principal article manufactured in the town; near it are extensive manufactories of brass wire. Population in 1831, 4119.

CHELMSFORD, the county-town of Essex, is situated near the centre of the county, twenty-nine miles E. N. E. from London, at the confluence of the Cam and Chelmer, from the old ford at which latter river it derives its name. At present the town consists of four principal streets, all well paved and lighted with gas. The houses are in general modern, and many of them have gardens behind them extending to the river. A beautiful iron-bridge was recently thrown over the Chelmer, and an elegant stone bridge of one arch over the Cann some time ago replaced that erected by bishop Maurice, in the reign of Henry I. It is by this bridge that the populous hamlet of Moulsham is joined to the town. Near the centre of the town stands the shire-hall, an elegant and commodious structure. The old county gaol, finished in 1777 at an expense of £18,000, stands in the hamlet of Moulsham. This possesses suitable apartments for the classification of prisoners, an infirmary for the sick, and a chapel. The old house of correction was incorporated with the gaol, an a new house of correction was erected at Springfield-hill, at an expense of nearly £56,000. It is capable of accommodating 254 prisoners, of whom 218 may be confined in separate cells. There are several large corn-mills on the Chelmer, the principal trade of the place being in corn, which is sent to the London market. It possesses also an extensive traffic of a miscellaneous nature, arising from its situation as a great thoroughfare. It has a navigable canal to the Black-water river—a distance of twelve miles—which has contributed greatly to its prosperity. The market is held on Friday, and it has fairs on May 12th, and November 12th. There is a very neat and commodious theatre, which is opened occasionally; assemblies and concerts take place periodically in the shire-hall; and horse-races, which continue for three days, are held in the latter end of July. Population in 1831, 5435.

CHEPSTOW; a sea-port town in Monmouth shire, 136 miles W. from London. It is finely situated on the slope of a hill among the lofty cliffs that rise abruptly from the western bank of the Wye near its confluence with the Severn. It is neatly built, the streets broad, well paved, and lighted with gas. There are no manufactures carried on here, but the foreign trade is considerable. Wines are imported from Oporto, and deals, hemp, flax, and pitch, from Norway and Russia. It is the port of all the towns on the rivers Wye and Lug, and supplies Herefordshire and the eastern part of Monmouthshire with all the necessary imports. It exports bark, iron, cider, coal, and millstones. It sends a quantity of timber to Plymouth, Portsmouth, and Deptford; and the Bristol market depends upon it in a great measure for its supply of grain. Ship-building is carried on to a considerable extent, for which there are convenient docks on the banks of the Wye. The tide runs up the river with wonderful rapidity, and rises frequently to the height of fifty or sixty feet. It has even been known to rise as high as seventy feet. Population in 1831, 3524.

*Chepstow Castle*, the ruins of which still remain, is built on the brow of a precipice, which rises boldly from the Wye, one side being advanced close to the edge, and constructed in such a manner as to appear a part of the cliff itself; the same ivy which overspreads the walls, twines and clusters round the high fragments, and down the perpendicular side of the rock. The other parts of the castle were defended by a moat, and consist of massive walls, flanked with lofty towers. The area occupies a large tract of ground, and is divided into four courts. The grand entrance to the east is a circular arch between two round towers. The first court into which it leads, contains the shells of the great hall, kitchens, and numerous apartments of considerable size, retaining vestiges of baronial splendour. Some Roman bricks which have been found in different parts of the ruin, have suggested that a portion at least of the castle was of Roman workmanship; but evidently the work was of Norman origin; the shell appears to have been built on one plan, and at the same time; but alterations and additions were made by successive proprietors.

Through the civil wars, this castle was considered of great importance by both contending parties. It was at first garrisoned for the king, but was surrendered to the parliament forces under the command of Colonel Morgan. Afterwards, the royalists, under Sir Nicholas Kemys, took it by surprise, and made the garrison prisoners of war. So much was the possession of this place valued, that Cromwell marched against it then in person; but after making himself master of the town, assaulted the castle without success. He then left Colonel Ewer to prosecute the siege. But the garrison defended themselves valiantly, until their provisions were exhausted, and even then refused

to surrender, though under promise of quarter, hoping to escape by means of a boat, which they had provided for that purpose. A soldier of the parliament army, however, swam across the river with a knife between his teeth, cut the cable of the boat, and brought it away. The castle was at length forced, and Sir Nicholas Kemys, with forty men, slain in the assault. This event was considered by the parliament so important, that the captain who brought the news was rewarded with £50, and a letter of thanks was sent to Colonel Ewer and the officers and soldiers engaged in that service. In 1645, the castle and park of Chepstow, together with the chase of Wentwood, and several estates which belonged to the marquis of Worcester, and other loyalists, to the amount then of £2500 a year, were settled on Oliver Cromwell. At the restoration of Charles II., the castle, &c., were restored to the marquis of Worcester, and has since continued in the possession of his descendants. The duke of Beaufort is present proprietor. One of the most interesting parts of the castle is *Marten's tower*, or the tower where Harry Marten, the regicide, was long imprisoned.

CHERT is a rock compound of silicious particles, mixed with limestone in such a way as to indicate that its formation has been partly owing to chemical solution of the flinty matter and partly mechanical solution of the lime.

CHERTSEY; a market-town in the county of Surrey, situated on the banks of the Thames, over which there is here a bridge of seven arches; nineteen miles W. S. W. from London. The principal articles of commerce here are flour, malt, iron-hoops, and brooms. Population in 1841, 5347.

St Anne's Well, in the parish of Chertsey, was formerly in great repute for curing diseases of the eyes, and St Anne's hill, one of the most delightful situations within its boundaries, was the residence of the celebrated C. J. Fox, in the latter years of his life. In the Porch House, at Chertsey, also, did Cowley close his days. Day, the author of Sandford and Merton, lived in this vicinity.

CHESTERFIELD; a parish and market-town in Derbyshire; the latter, twenty-five miles N. E. from Derby, is of more trading importance than any in the county. At the time of the Norman survey it was called *Cestrefield*, and was then merely a bailiwick to Newbold—the latter now but a small hamlet in the parish; subsequently it advanced to considerable importance, and king John conferred upon it a charter of incorporation, with the privilege of two markets and a fair: this charter was ratified by succeeding sovereigns, enlarged by queen Elizabeth, and confirmed by Charles II. The new municipal act (passed in 1835,) vested the government of the town in a mayor, four aldermen and twelve councillors. The town occupies a considerable extent of ground, and is irregularly built. It has extensive manufactories of cotton, silk, carpets, gloves, hosiery, &c. The neighbourhood abounds with coal, iron-stone, and lead-ore, all of which are successfully wrought. There are several iron-foundries in the parish, where all kinds of machinery are made; and lead is sent in great quantities from Chesterfield, by the canal that runs from that place into the Trent, a little below Gainsborough. There are also potteries in this parish, chiefly employed in making coarse brown ware, at which some hundreds of people are employed Chesterfield gives the title of earl to a branch of the Stanhope family. Population of parish in 1831, 5775; in 1841, 6212.

CHICHESTER; a city and county in itself, locally situated in the hundred of Box and Stockbridge, and rape of Chichester, county of Sussex, lying on a gentle eminence, surrounded on all sides, except the north, by the small river Lavant. It boasts of great antiquity, and is deemed by Horsley to be the Regnum of the Romans. After being destroyed by Ella in the fifth century, it was rebuilt by his son Cissa, who called it Cissa Ceaster after himself, and made it the capital of the kingdom of the South Saxons. It subsequently suffered much from the Danes, but was benefited after the conquest by the removal to it of the episcopal see from Selsea. Since that period the siege which it sustained under Charles I. seems the only historical fact worthy notice. This town was originally strongly walled, having four gates fronting the cardinal points of the compass, and from these gates four principal streets, named after their gates, and respectively meeting in its centre nearly at right angles, where there still stands an octagonal cross—erected in 1478 by Robert Storey, on his being translated from the see of Carlisle to that of Chichester—in the decorated style of English architecture, which, in simplicity of design, and elegance of execution, is supposed to surpass anything of the kind that is to be met with in the kingdom. The gates have long ago been removed, and the walls taken down, except on the north and east sides, where they were, upwards of a century ago, formed into terraces, covered with gravel which, now shaded with rows of lofty elm trees, afford a delightful promenade for the inhabitants, and are highly ornamental to the city. The houses are generally substantially built, the streets well-paved and brilliantly lighted with gas. The palace of the bishop is chiefly remarkable for its extensive and admirably planned gardens. The cathedral, built in the form of a cross, with a fine tower rising from the centre, surmounted by an octagonal spire, is a most beautiful building. The following are stated to be the dimensions:

| | Feet. |
|---|---|
| Total length from east to west, including Lady chapel | 407 |
| Length of transepts from north to south | 129 |
| Height of the spire from the floor | 271 |
| Height of the vaulting of the nave | 62 |
| Height of the vaulting of the choir | 59 |

The trade of this town consists chiefly in malt, flour, corn, timber, and coal. Population in 1831, 8270. Collins, the poet, was a native of Chichester, and a monument, executed by Flaxman, is erected to his memory in Chichester cathedral. A statue, from the chisel of Mr Carew, has also been erected here to the memory of William Huskison.

CHINA. (*a.*) The modern empire of China, in addition to China Proper, (which, with its eighteen rich and fertile provinces, each of them equal in extent and population to some European kingdoms, covers an area of 1,298,000 square miles,) now embraces Chinese Tartary, a region extending from the sea of Ochotsk, on the east, to Bukaria, on the west, and from the Altay and Nershink mountains, on the north, to the Great Wall, on the south. China is strengthened by having Thibet on the one hand, and Corea and Loo Choo on the other, almost entirely subject to its influence; while its importance in the eyes of eastern nations is augmented by claiming to include Cochin-China, Camboja, Burmah, and Siam among its tributary kingdoms. It thus presents a dominion extending over thirty-

five degrees of latitude, and seventy of longitude, and covering an area of upwards of 3,000,000 square miles. The highest census of its population is that given in 1812, namely, 361,279,897. This is generally considered to be much exaggerated; yet on comparing all accounts, it may be pretty safely calculated, that the Chinese empire contains within its bounds at least 300,000,000 human beings.

The *cities* of China are divided into classes, and the distinction is nicely and precisely marked by the last syllable of their names, which is in fact a distinct monosyllabic word, indicating their size, rank, and municipal jurisdiction or dependence. These monosyllables, one or the other of which is found at the name of every city, are *fŭ* or *fou*, *cheu*, and *hien*. *Fŭ* denotes a city of the first class, having under its jurisdiction a certain number of cities of the two inferior classes. *Cheu* denotes a city of the second class, subject to the jurisdiction of its *Fŭ*; and *Hien*, a city of the third class, subordinate to its *Cheu*, as well as under the jurisdiction of its *Fŭ*. The study of geography might be considerably facilitated if this practice of the Chinese were general, and every nation, by a simple affix to the names of their cities and towns, would thus explain at one glance their relative rank or importance. According to Father Le Comte, there were in his time more than 160 cities of the first class, 270 cities of the second class, and upwards of 1200 of the third, besides a number of walled towns not included in any of these classes. The cities of China are formed on a regular plan, which is square, whenever the situation and nature of the ground will admit. They are all enclosed by high walls, with large gates of more strength than beauty. Towers, which vary in elevation, but which are sometimes eight or nine stories high, and in form sometimes round, but more commonly hexagonal or octagonal, are built at regular distances; and, when practicable, a wide ditch, filled with water, surrounds the whole. The streets are in straight lines; the principal of them are about thirty feet wide, but the houses are meanly built, having rarely more than one story above the ground-floor; so that the width of the streets, though not too much for the thronging population and bustle of a Chinese town, conduces but little to beauty or effect. The shops are adorned with silks, porcelain, and japanned wares, the most brilliant of which are hung outside the door to attract customers, and (the practice being universal) give the main streets a gay and somewhat of a theatrical appearance. A large board is suspended from the front of each shop; it is either gilt, or painted with some bright colour and varnished, or some fanciful sign, with the names of the principal articles sold in the shop inscribed upon it. These showy sign boards, placed at equal distances on both sides the streets, give the whole extent the appearance of a long colonnade, rather curious than beautiful.

China, like Holland, abounds in *canals*, but used more for the purposes of irrigation than conveyance. The traveller finds almost everywhere a large canal of fine, deep, clear water, flanked by two causeways, cased with flat stones or marble slabs, set in the ground and fastened by groves made in posts or columns of the same materials. From this main canal there shoot off, at certain distances, numbers of smaller canals, the waters of which are again let off into innumerable rivulets that are conducted to different large towns, or employed to irrigate the country. Besides these they have an infinite number of reservoirs and channels by which they can lay the fields under water, to produce rice, their principal food, and which requires almost constant humidity. But nothing in China or in any other part of the world in the way of canals, is to be compared with the Yun Leang, or Royal canal, which is 300 leagues in length. It was dug by an almost incredible multitude of men, and at a most prodigious expense, under the emperor Chi-tson, (about the year 1280), the founder of the dynasty of the western Tartars. "This canal," says Du Halde, "traverses the provinces of Pe-tche-li and Chantong; then it enters the province of Kiang-nan, and discharges itself into the great and rapid Yellow River. Down this river you sail for two days, when you come to another river, where you find again the canal, which leads to the city of Hoaingan; from thence it passes by many cities and large towns, and arrives at the city of Yang-tcheou, one of the most famous ports of the empire; and a little beyond this place it enters the great river Yang-tse Kiang, which divides the province of Kiang-si nearly into two equal parts, and runs as far as Nan-ngan, from whence you go by land to Nanhiong, the chief city of the province of Quang-tong, where you embark upon a river that leads to Canton, so that you may travel very commodiously, upon the rivers or canals, from the capital to the remotest part of China, being about 600 leagues, by water." "I may safely say," says Barrow, "that, in point of magnitude, our most extensive inland navigation of England can no more be compared to this grand trunk that intersects China than a park or garden fish-pond to the great lake of Winandermere."

The canals are crossed in all directions by numberless *bridges*, but owing to the facility afforded by the canals for transporting weighty burdens by water, these bridges do not require to be built of great strength, as every object of produce or manufacture can be wafted over on rafts or in barges. In general, indeed, only foot-passengers use the bridges, which are, for the most part, of a light, fanciful and elegant construction. They are found of three, five, or seven arches; the centre arch being frequently from thirty to forty-five feet wide, and sufficiently high to let vessels pass without striking their masts. Some of them stride across the canal with one bold, lofty arch. The elevation renders in many cases steps necessary, by which you ascend and descend. Some of these bridges are of extraordinary beauty, and even magnificent. There is one near Pekin, built entirely of white marble, elaborately ornamented. Others are found over the canals of still greater magnificence, and with a grand triumphal arch at each end. And others again, instead of being composed of salient arches, are flat from one side of the canal to the other, stones or marble flags of great length being laid on piers so narrow and airy, that the bridge looks as if it were suspended in the air. But the canal bridges are surpassed in magnitude, and occasionally in beauty, by the bridges thrown across rivers, or long swamps, and places exposed to inundations. Some of the latter are of prodigious extent, and have triumphal arches on them, built of wood, in the pagoda style, and splendidly painted. One of the most celebrated of these is the bridge of Loyang in the province of Fokien. According to some authorities, it is 5940 feet long by 104 feet broad; it has no arches, but is formed of 300 massy stone piles, over which are laid horizontally large

stones of an equal length, which repose on the columns or piles, and afford a flat convenient passage from one side to the other. The piles rising out of the water are shaped like a boat or barge with a sharp bow, the acute angle being directed against the current, that they may suffer the less from the violence and lashing of the waves. The horizontal stones are twenty-two paces long by two broad, and there are 1400 of these mighty stone beams all alike. To prevent passengers falling off, balustrades with lions cut in stone, and other ornaments, are placed on both sides of the bridge. The whole of the bridge is built of one sort of black hewn stone. Where this bridge stands there was formerly a ferry, which was rendered extremely dangerous by the rapidity and violence of the stream. In the province of Fokien there is another majestic bridge over an arm of the sea, built of yellow and white stone. It is 2475 feet long, and 8½ feet broad; has a hundred very lofty arches, and is adorned with sculptures of lions and other animals, in the prevailing taste of the country. The Chinese described to the missionaries a similar bridge, but of nearly twice the length, as existing near the city of Focing. The Chinese have, besides, numberless bridges of boats, which correspond with those in use in Europe; and they have, and had long before we adopted them, suspension bridges. In addition to their bridges, simply for the passage over waters, they have an immense number of others to level their roads, thrown from mountain to mountain, over deep ravines; and these are frequently approached by excavations and by roads hewn out on the mountains' sides of extraordinary dimensions and difficulty. In the Alpine regions of the province of Xensi, there is a succession of these bridges and works for about ten miles.

The *public roads* in China are represented by the Jesuit missionaries as being so pleasant and so nicely paved, that a traveller might fancy he was walking over the streets of a city. Whenever an irregularity of surface occurs, if an elevation, the industry of the people has either levelled it or cut through it; and, if a hollow, they have filled it up. The roads are often paved with stones neatly laid in and fitted to each other; and, in regular succession, stone columns, not unlike our mile-stones, mark the distances. At each eighth of these pillars, which is computed a day's journey, there is an inn erected by government, and under the direction of the local magistrate, where every person travelling on the business of the state is entertained according to his rank. The common inns on the road are pretty numerous, but narrow and mean, and badly provided. In these imperial highways, as in their canals, the Chinese delight in straight lines; and, like the bridges, the roads are often ornamented with triumphal arches, and with temples and pagodas in which travellers may repose by day, but not stay all night, except indeed they be mandarins, when they may make very free with the houses of their gods, and with the idols themselves if they stand in their way. In some provinces, the public roads are flanked by a row of trees on each side, when they look like a pleasant mall or promenade, or by walls, eight feet high, to prevent the passengers damaging the well-cultivated fields and gardens. At proper distances there are seats erected in a neat style for the repose of the weary traveller, which are well guarded both against the winter cold and the summer heat. There are also occasionally found along these roads men employed by rich and charitable individuals to distribute to the poor travellers tea, and, when the weather is severe, a sort of decoction of ginger, for which no return is required save that the wayfarers forget not the name of their benefactors.

From the vast population of the Chinese empire, and the very restricted nature of their commerce, it becomes necessary that the greatest attention be paid to the pursuits of *agriculture* The government has, from very remote times, had the merit of respecting and honouring the tillers of the soil, and of rewarding those who improved agriculture with the highest distinctions. In the ranks of society the husbandman, taking precedence of soldiers, merchants, artisans, and others, stands next to the man of letters, or state officer. Both the soldiery and priesthood, whenever the service of the former permits, and whenever the establishments of the latter are endowed with lands, are practical agriculturists. Every soldier stationed on the different guards by the great wall and elsewhere, has his portion of land assigned to him, which he cultivates, and pays his quota of the produce to the state. Even the emperor himself, at the vernal equinox, after a solemn offering to the God of heaven and earth, repairs to the fields, ploughs a few ridges of land, and casts in the fructifying seed. Rice, and not corn, is the staff of life in China. It is cultivated wherever the water necessary to its growth can be commanded, and most of what is really admirable in the industry and ingenuity of the Chinese farmers is to be found in their system of irrigation and their economy of the precious fluid. The Chinese eat an immense quantity of garlic and onions, and these the fishermen cultivate even on the bosom of the waters over which they are constantly sailing. Having positively no houses on shore, nor fixed abode, and consequently no inducement to cultivate patches of land, which their more important pursuits of fishing might require them to leave, they have invented a system of culture which may move with them, and they thus transport their gardens wherever they may go. This they do by constructing rafts of the ever-useful bamboo, which are well interwoven with weeds and strong grass, and then launched on the water and covered with earth. These floating gardens are made fast to the stern of their junks and boats, and towed after them. Thousands are born, brought up, and die in these boats, having no more communication with the shore than necessity compels. The boats are covered over in the after-part with a kind of bamboo matting, sufficiently strong and waterproof to keep out the rain, and of length sufficient to allow the inmates to lie down unexposed to sight. These poor creatures, from being confined in so small a place, —accustomed to squat upon their hams, and crawl about their boat,—are generally very awkward in their motions when on their feet. Their male children are taught the art of swimming as soon as they know the use of their legs, until which time they wear a calabash suspended round their necks, to buoy them up in case of their falling overboard.

The *constitution* of the Chinese empire is patriarchal. The fundamental principle of the administration is to preserve the peace of the empire at all events. Its constitution is less the work of political wisdom than the production of time and circumstances. Revolutions have occurred: the

institutions of the country have been subverted, strangers have sat upon the throne, and ruled with an iron hand: but the empire has always returned to its former state. and the nation has become what it was before the change.

"The fundamental principle here, (says the Rev. C. Gutzlaff,) as in other despotic states, is to sacrifice individual happiness to the welfare of the whole, and to dispose of this according to the pleasure of the autocrat. In China, these proceedings are subject to invariable rule. Long experience has taught the governors to follow the same line of conduct, certain of success; whilst the people have been accustomed to submit without murmuring. China is the beau-ideal of despotism, under the endearing name of a paternal government. The great spring by which the institution is to be kept in motion is filial piety, changed towards inferiors into affectionate kindness, and towards superiors to veneration and obedience. To strengthen the hands of government, a strong line of demarcation has been drawn between its officers and the people: from the highest minister to the meanest soldier, all are by their situation interested in upholding the throne and defending the prince. Being entirely dependent on the peror, having all to hope for and to fear from him, and nothing to expect from the nation, the attachment of those employed by the government to the existing order of things is lasting. As they are, moreover, the richest and most intelligent order, and the sovereign lords of the country, they naturally present a very formidable front to every aggressor. Scholars can look only to the court for honours and emoluments: the nation does not remunerate their studies nor labours. There are no Longmans nor Murrays in Pekin; there are no rich landholders or merchants who could prove a check upon these united powers. Any man who has amassed considerable property, and wishes to enjoy it with security, buys a nominal rank, and thus virtually enlists himself on the side of government.* Meanwhile, the higher orders and great officers of the state are under a perpetual state of surveillance; a sword is for ever suspended over their heads, each man is endeavouring to rise upon the ruin of his rival. Bribery, lies, misrepresentations, mutual accusations, and every species of craft and cunning, are the order of the day among the mandarins; but they are thus kept in check, and the emperor gains a perfect knowledge of each man's character and proceedings. There are six boards, called Lich Poo, at Pekin, to which all matters of importance are referred; but they do not appear very successful in their transactions. The great task of the board of public works is to keep the Yellow River from inundation, which they never have been able to do; while the board of foreign affairs confines its attention to keeping the Mongols in proper order, and to preserve the frontiers against inroads; but they are not more fortunate. Yet, founded on dispute and ignorance, and supported by craft and cunning, without a virtue to exalt, without patriotism to secure, without religion to ennoble and purify, this immense empire not only preserves itself in outward security and inward tranquillity, but flourishes and extends. It was never before so large as it is now."

China seems indeed to be at the zenith of its glory; for neither to the east or west, the north or south, can any increase of territory be made. It has most to apprehend from the wild and lawless nomades of the north; yet the threatening position which Russia has taken in the north, and England in the south, will doubtless check the depredatory habits of these tribes; and, though unintentionally, these two powers are the strongest bulwarks of the Chinese empire. The Chinese possess great advantage over other ancient nations in not considering labour degrading, of whatever description it might be, and in *avoiding the division into castes*. Every one is at liberty to choose for himself the occupation best suited to his constitution and habits, and no one is degraded because he belongs to a certain class of society. Generally, the Chinese may be considered as an agricultural people, whose density of population exceeds the means of their subsistence; hence many individuals are without provision. Industry becomes a necessary and constant habit, whilst the least intermission of it leads to misery. Thus ground down to the earth by the most urgent bodily wants, every thought is absorbed, and there is no time nor inclination for mental or spiritual improvement. Hence the vast number of beggars, vagabonds, and the thousands who are constantly perishing for want of sustenance. The food, clothing, dwelling, and whole mode of life amply bespeak the stern necessity by which they are controlled. Those classes who are above want are too deeply dyed with the national spirit not to show themselves as Chinese by their grovelling desires. Sensual inclinations operate instead of want; their habits degenerate into sloth, because they are under no necessity to engage in labour, and the *length of their nails* is used t indicate their exemption from menial occupation.

"Another great and powerful agent (says Gutzlaff), in moulding the Chinese character is *religion*. Without taking a partial view of this subject, it must be confessed that the Confucian doctrines neither engage the affections, nor purify the heart. *Taouism*, a mere theoretical and mystical system, is ill suited to a people who are obliged to study practical usefulness in every thing. The Chinese have too much common sense to believe the monstrous fables of Buddism and embrace its idolatries to its full extent. Still the outward ceremonies are faithfully observed, while the great mass of the people show perfect indifference about the tenets, or turn every thing religious into ridicule.* Whoever wishes duly to observe the aberrations of the human mind, the uncontrolled sway of the passions, and the total absence of conscientious scruples, has only to live among the Chinese. They consider that alone to be a crime which is punishable by law. Moral obligations do not exist; the most sordid self-interest directs all their actions; and public opinion, which exercises a most powerful sway among Christian nations, is a thing entirely unknown in China. There is no fear of God in their hearts, and therefore no adequate restraint upon their innate vices. *Money* with the Chinese is the very idol which all, without distinction, worship. Their thoughts, conversation, and constant pursuits centre in acquiring the 'mammon of unrighteousness.' It is the national spirit, the public sentiment, and the chief good of high and

* "They have invented a praying machine, into which the prayers to be recited are thrown, written on a slip of paper: as these structures are in the shape of windmills, the wind, of course, puts them in motion, and every rustling of the paper is a prayer; so that the number of ejaculations may be multiplied to millions, without any exertion on the part of the devotee."—*Gutzlaff.*

low. Political questions agitate them no more than religious ones. Patient, nay slavish, in their pursuit of this phantom of happiness, they are loyal and quiet citizens as long as government does not mar their plans. They will endure the greatest indignities, and submit to the loss of their whole property, if they are afterwards only allowed to amass a new fortune. Not satisfied with hankering after money during this life, they have established a rate of exchange beyond the grave, and by burning paper laid over with very thin tin plates, they confidently hope that the asker will take the value of dollars in the next world. Wealth, long life, and *male* children are with those people the summits of human happiness; for in the possession of these objects, they hope to find perfect contentment. The government, also, has imprinted its stamp upon the Chinese character. In every despotic country the minds of the people become cringing and adulatory, and being borne down by main force, they are obliged, while defending themselves from oppression, to have recourse to deceit, and sundry disingenuous practices. Whether they are to remain peaceful, is no longer a question. They worship the rod that strikes them: the very nerve of noble enterprise is cut by their masters. They are a tame, a pusillanimous nation, filled with trembling and cunning, and formidable to their rulers only by dint of their numbers. The constitution of the government, so convenient to those who rule, and so irksome to those who obey, prompts parents to practise tyranny in their domestic circles. Thus despotism is the order of the day. Lest, however, the nation should become altogether indifferent about the constitutions of the country, the government has wisely assigned to the people a share in the administration, by raising talent without respect to nobility. This gives a strong impulse to the acquisition of knowledge; all strive for it; and the number of readers in China is far greater than in any other country in Asia, Japan excepted."

The founders of the Chinese empire, and their immediate descendants, are always spoken of as *delighting* in mild punishments; but, as plunder, and rapine, and commotion, prevailed, severer punishments were had recourse to—such as banishment and the loss of life. Revolt, or attempting the life of the emperor, crimes of the greatest kind, were punished by strangulation, and slowly mutilating the body; exterminating the whole kindred, not excepting infants; or sawing asunder the offender; the wearing of the congque, or pillory, during life; and solitary confinement. During the *Han* dynasty, at which time the criminal code was revised, the ancient punishments,—especially that of exterminating a whole family, consisting sometimes of several hundred persons, for the crime of one ambitious man—being considered as unnecessarily severe, were for ever abrogated, by an act of government. The ancient punishments for the ten capital crimes, have of late years been a source of profit to the painter; for pictures drawn on what is termed rice-paper have been imported into Europe, as confirmatory of the barbarism and cruelty of the present race of Chinese judges and mandarins; but the fact is, these cruel punishments have long since ceased to exist. Anciently for treason, murder, and adultery, the prisoner and witnesses were subject to torture, in order to compel them to confess all they knew, and their depositions were laid before the emperor and the judicial board at the capital, before punishment was inflicted. The Chinese lighter writings often detail instances in which the friends of the accused have succeeded in defeating the undue influence of the magistracy, by appealing in person before this board; and such magistrates have consequently been degraded and imprisoned. The practice of torture to obtain confession, can now hardly be said to exist. The *Gan-chā-tsze*, or provincial judge, who ranks next to the viceroy, has not the power of punishing a person capitally, except for piracy and a few other heinous crimes, but must report all cases to the emperor, and wait the decision of the Pekin board; he can transport, imprison, levy fines, and punish by bastinadoing, congque, &c. The magistrate being always in court, a culprit is no sooner taken, and his accusers in attendance, than he is put on his trial. If it be a light offence, and he is unable to pay a fine, he is laid on the floor, and the *punishment of blows* inflicted with a long flat bamboo. If the punishment is not excessive, the culprit rises and walks home, and the following day he is able to follow his employment. For a corresponding offence in this country, a person might be imprisoned a month, to the injury of his connections and family, but in China the whole affair—accusation, trial and punishment—is gone through in a few hours.

The following scale of punishments is taken from the Chinese penal code; it shows the manner in which punishment is increased according to guilt. Ten blows with the bamboo was anciently the lowest punishment; it is now repealed to four blows, and so of the others, the last column being the repealed code, viz.,

| | | | | | |
|---|---|---|---|---|---|
| The first | nominally a punishment of | 10 blows | of which only | 4 blows | are to be inflicted. |
| The second | | 20 blows | | 5 blows | |
| The third | | 30 blows | | 10 blows | |
| The fourth | | 40 blows | | 15 blows | |
| The fifth | | 50 blows | | 20 blows | |

The second degree or division of punishment, is inflicted with the larger bamboo, and is subdivided in the following manner.

| | | | | | |
|---|---|---|---|---|---|
| The first | nominally a punishment of | 60 blows | of which only | 20 blows | are to be inflicted. |
| The second | | 70 blows | | 25 blows | |
| The third | | 80 blows | | 30 blows | |
| The fourth | | 90 blows | | 35 blows | |
| The fifth | | 100 blows | | 40 blows | |

The third division in the scale of punishment is that of a temporary banishment to any distance not exceeding five hundred lee*, with the view of affording an opportunity of repentance and amendment. Of this species of punishment there are also five gradations, namely

| | | |
|---|---|---|
| Banishment for | 1 year, and 60 blows | with the bamboo, reduced as above. |
| | 1½ year, and 70 blows | |
| | 2 years, and 80 blows | |
| | 2½ years, and 90 blows | |
| | 3 years, and 100 blows | |

Perpetual banishment, the fourth degree of punishment in order of severity, is subdivided as follows, and is reserved for cases wherein even for considerable offences, the life of the criminal is spared by the mercifulness of the laws: a hundred blows with the bamboo, and perpetual banishment to the distance of 2000, 2500, or 3000 lee. On reaching their destination, the banished offenders may follow their callings, but they are required once a week, or once a month, to appear before the magistrate of the place, and report themselves. The fifth

* Ten lee are usually estimated to be equal to three geographical miles, but the proportion varies a little in the different provinces of the empire.

and ultimate punishment which the laws ordain is death, either by strangulation or by beheading. All criminals capitally convicted, except such atrocious offenders as are expressly directed to be executed without delay, are retained in prison for execution at a particular period in the autumn; the sentence passed upon each individual being first duly reported to, and ratified by the emperor.

The Chinese, it is well known, have long been possessed of the art of communicating ideas. Little progress, indeed, can ever be made in the cultivation of the arts and sciences, without *writing and printing*, but both have long been understood, to a certain extent, in China. Before the time of Fo-hi, says a Chinese writer, the central government published its manifestoes by means of a certain number of interlaced threads or cords resembling the "Quippos" of the Peruvians, which had a particular signification according to the number of knots or the manner of braiding. Fo-hi first invented the eight *Kua*, the basis of the religion and legislation, as well as of the written character and literature of the Chinese empire. Great attention was now given to the sciences; at least from the time of the third dynasty, that of Tscheu. Though the greater part of the old Chinese literature was subsequently destroyed, yet, under the dynasty of Tang, there were as many and extensive libraries to be found in China as in any other part of the world during the sixth, seventh, and eighth centuries. The emperor, the higher and inferior officers of state, the literati, and the various scientific and ecclesiastical institutions, possessed considerable libraries, which are severally enumerated in the literary division of the Chinese "Encyclopædia of Matuanlin," in the 174th book. At that period China possessed a collection of not less than 80,000 volumes on the various branches of literature and science. These works were of course very expensive, and Matuanlin says, that whoever possessed a collection of books was regarded as a distinguished person. There were but few copies of the larger works, and great difficulty was found in communicating their contents throughout the empire by means of oral instruction. The distinguished individual who first discovered a remedy for all these deficiencies, and who is still looked upon by all the printers and bookbinders of the empire as their patron, was Fong-tao, who flourished in the first half of the tenth century of our own era.

In the reign of Ming-tsong (927—934) Fong-tao had the principal and, as they were called, classical works, cut out in stone plates, which had been done several times during the preceding dynasties, and obtained the sanction of the emperor to take off impressions from them, to be circulated in the country. The emperor consented, and in the third year of the period "Tschang-hing" of the reign of Ming-tsong, A.D. 932, the art of printing by means of stone plates began in China. The plate was blackened, and the characters were engraven on the stone in basso-relievo, so that on the impression the paper was black and the letters white, which is still the case in China in all their lithographic printing. The stone plates, however, were soon superseded by wooden ones, which gave rise to the art of printing by means of plates of wood, in the same way as is still done with all their larger works. According to another writer, Fong-tao is stated to have commenced at once with the wooden blocks; and, in the annals of the later five dynasties, it is stated that Fong-tao (in the second year of the period "Tschang-hing" of Ming-tsong, of the later dynasty of Tang, A.D. 931) had solicited permission from the emperor to cut in wood and print, for the use of the pupils of the imperial college, an edition of the nine king or classical works. He obtained the sanction, but the work was not finished till the second year of the period "Kuangschun," the founder of the later Tscheu (A.D. 952). The process pursued in the printing of this work by means of wooden plates has been carried on down to the present day without any essential alteration. The wood selected for these blocks is strong but not brittle; it is called Li, and resembles that of the pear-tree. From the Chinese accounts it is smooth and shining, and has a bitter flavour, on which account the worm never attacks it. This process of wood engraving differed from the previous lithography employed, inasmuch as all the letters and figures were worked in high relief; the wood being carefully cut and filed down all round them. The characters therefore, as with us, are black when printed, while the paper remains white. When we reflect on the great number of letters which compose the Chinese alphabet, the advantage of block printing is immediately obvious—and, in fact, it is the only method adapted for works of any magnitude. It is by this process that the Roman Catholic missionaries in China have printed single pages and even entire works in the Latin and other European languages—such, for instance, as the Spanish and Chinese Grammar of P. Varo, and two books of Confucius—works which are among the greatest bibliographical curiosities in the world. The manner in which the missionaries obtained these works, was by writing in a very legible hand upon transparent paper, which the Chinese wood engravers faithfully copied, without understanding a single word of the contents.

During the succeeding centuries various attempts were made to substitute moveable types for the wooden blocks, but they always terminated in a return to the old method. Under the great dynasty of Soong (A.D. 960—1280) an attempt was made to print by means of movable types made of burnt earth, and the emperor Kang-hi, of the present Mantschoo dynasty, had, according to Dr Morrison, a great quantity of movable types cast in copper. Kien-long, however, the second in succession to this wise prince, had all the types melted down during a period of great scarcity of money, in order to convert them into coin. In Dr Morrison's extensive collection of Chinese books, there are a Chinese Dictionary, in 24mo., and a history of the Loo-Chew islands, in 4 volumes, which were printed with these movable types of Kang-hi's, but the characters are far inferior in beauty and regularity to those of the ordinary wood blocks. Kien-long subsequently, however, caused 250,000 movable wooden types to be cut, which were then, and still continue to be, used in the printing of the "State Calendar," a work published every three months.

The works which have been printed in English and Chinese, at the college founded at Macao by Dr Morrison, by means of metal types, as well as the specimens of movable Chinese letters cast some years ago under the direction of M. Pauthier at Paris, are everything that could be desired, though there is no hope of ever attaining in our metal types the ease and delicacy which the Chinese engravers impart to their wooden blocks.

The Chinese printers have no notion of a real printing-press; and besides, their paper is so thin that it could not resist a hard pressure. The printer holds two very fine brushes in his right hand, of which one contains ink, and the other is dry. With the former he blackens all the letters; the latter he passes gently over the paper which has been laid on them. By this process a single man can with great ease print off several thousand sheets in a day. The Chinese paper is so exceedingly thin and transparent that it is printed on only one side. Every page is numbered, commonly also the title of the work, or of the book and chapter. Two pages are usually worked together, and the sheet of paper has a black line down the middle as a guide to the bookbinder, who folds it double, and fastens the open leaves together. Every volume is either gummed at the back with a very fine paste, or stitched with silk in a manner peculiar to the Chinese.

In modern times, improvements in the Chinese language have been few and unimportant. Perhaps we ought to say that it has deteriorated, since its difficulties have been greatly increased by the addition of many arbitrary and complicated characters. It has beauties and excellencies, and is capable of conveying thought with great precision and force. Still, the number and variety of the characters of the language are so great, that very much time must be occupied in merely learning their sounds and forms; this points to the necessity of either simplying the existing language, or of adopting another in its stead. The experiment which is now making in India, to express the various languages and dialects of that country in the Roman character, will eventually, we doubt not, be adopted in China.

The *domestic habits* of the Chinese are now well known. Their great staff of life is rice, to which may be added millet and the sweet potato. They do not understand how to bake bread. Wheaten flour is principally used for vermicelli. Beans and peas are favourite dishes. Their chief fruits are oranges, mangos, loquats, medlars, and lungyen. Their favourite meat is pork. Very little beef is consumed; but dogs, cats, and horse flesh are not refused.

The Chinese eat almost everything that comes to hand. In the streets a number of birds are daily exposed for sale, which amongst us have not yet gained much repute for flavour; among others, hawks, owls, eagles, and storks. To an European nothing can have a more laughable effect than to see the Chinese arrive with a carrying-pole supporting two bird-cages, which contain dogs and cats instead of birds. A small thin sort of spaniel appears to be most in request; they sit quite downcast in their temporary dwellings when they are brought to market, whilst the cats make a dreadful squalling, as if conscious of their fate. The flesh of these last, when they are well fed, is much esteemed in China, and they are often seen on the tables of the rich. Other Chinese bring upon their carrying-pole many dozen of rats, which are drawn quite clean, and, like pigs in our country, when they have been opened, are hung up by means of a cross piece of wood through the hind legs. These rows of rats look very nice, but they are eaten only by the poor. The tiger's flesh is much esteemed among military officers; its gall and bone being mixed with their food, in order to inspire their souls with irresistible courage and tiger strength. There are gourmands in Pekin as well as in Paris and London: and Choo-fo or Tsingping would prefer a bird's nest, or a hicho de mer (a sea slug), to all the turtle soup and venison of my Lord Mayor's dinners. The best kind of birds' nests is very dear; and a gourmand can with the greatest ease devour at one breakfast the value of as much as might support at least four people throughout the year. Shark's fins, fish maws, cow's sinews, and the antlers of deer, are in great requisition for their gelatinous qualities. Buffalo hides are also boiled down for their jelly. The favourite beverage, of course, is tea; this is drunk out of vessels which are seldom washed, lest the flavour should be diminished. No wine is extracted from the grape; but rum is distilled from the sugar cane. Beer, cyder, &c. are quite unknown. Their great entertainments last several hours, whilst tea and liquors are served up in the intervals of the repast. If the party is *classical* and consists of learned men, they amuse themselves with riddles, poems, and satires. They are a cheerful people, and at their meals all is joviality and amusement. They are extremely sumptuous in their parties, and the ceremony of inviting the guest—first by cards, then by importunate messages, and afterwards, when he is come, to sit down to table, is absurd and extravagant to a degree. When all are collected, and the host desires them to be seated, a regular scuffle ensues who shall be first at the *lowest* seat: an affectation of humility carried to a length truly preposterous. Very distinguished persons have music during the entertainment, and the time is generally spent in witnessing the tricks of jugglers and the performances of comedians. Their houses are for the most part built of brick, which are made in great perfection, and are joined so as to form triangles, squares, circles, and figures of flowers, which give to the exterior a very finished appearance. At the entrance of a rich man's house, one observes various flower-pots, and artificial rocks, mountains, and gardens. The principal hall is the most ornamental part of the house. The walls are adorned with inscriptions drawn upon a lacquered plank with golden letters. Most houses are only one story high; if two, the uppermost is inhabited by the women. The windows are small, and admit but little light, glass being scarce, and paper and shells being substituted. Terraces, as in other eastern countries, are often built on the roofs, where they ascend to enjoy the cool of the evening. The law does not permit a person to deviate from established rules in the architecture of his house. If he ventured to build an elegant or commodious habitation from his own design, his property would be confiscated and his house pulled down, under the plea of a useless waste of money. The interiors of their rooms possess very little furniture beyond what is just necessary.

The upper classes, and especially the inhabitants of the maritime provinces, are dreadfully addicted to opium-smoking. The fumes of this pernicious drug are drawn through a peculiarly-constructed pipe, whilst the wretched victim lies down. He very soon falls asleep, and on awaking, takes a cup of tea, and then again repeats the process. When it has become a habit, it cannot be left off, without the wretched being falling into a premature grave: it, of course, soon destroys the strength of the body and the faculties of the mind. All his powers are consumed in procuring means to attain this delicious poison; and thus he frequently becomes a gambler, thief, and robber.

With regard to marriages and their treatment of the tender sex confided to their care, the Chinese vary but little from the other Asiatic nations:—"The birth of a daughter," says Gutzlaff, "is an object of sorrow; and many female children are destroyed—drowned in warm water, and at the moment of birth consigned to the grave. The government connives at this monstrous and most unnatural crime, because it acknowledges the sovereign authority of the parent over the life of its offspring, and considers female infanticide as the most effectual check upon the too rapid increase of population. The murder of female infants is prevalent throughout the empire, and perpetrated with shameless atrocity." "The parents, instead of giving a dowry with their daughter, receive a price, varying from six dollars to five thousand, according to the beauty or rank of the lady. When she leaves the paternal roof, the bride is seated in a sedan, in which she is locked up, accompanied with musicians and people bearing flags. The key of the sedan is carried by the bride's mother, who, on arriving at the bridegroom's, presents him with it. The bride is then released, and if not approved (for that is the first time she is seen by her future spouse), she may be sent back; but if her appearance is agreeable, she is introduced with many bows and ceremonious gallantries, and ducks and nods, into the great hall. They then burn incense and bow before the idol, and the whole is concluded with a repast. Forced marriages often produce tragical results: sometimes the female has recourse to poison; sometimes she is contented with the gentler but no less decisive means of liberty, by shaving her head. The grandees and rich men keep regular harems. Beautiful and accomplished females, for which the country about Nang-choo and Soo-choo is as celebrated as Circassia, are extensively bought and sold."

Corpulency is deemed a beauty in men, but a blemish in women. The women have usually a peculiarly arched eye-brow,—as much the effect of art as nature,—a very unmeaning face, and, among the higher classes, exceedingly small feet, from the tight pressure, during infancy and childhood, of small wooden shoes. This custom originated (as described in Chinese history) several centuries back, when a large body of females rose against, and endeavoured to verthrow, the government. To prevent the recurrence of such an event, the use of wooden shoes was enforced on all female infants, so small as to disable them, without great pain, to make any use of their feet. This custom has now become so familiar from long usage, that a small foot is reckoned one of the greatest attractions a Chinese female can possess. The education of Chinese ladies is extremely limited. According to Chinese writers, the first principles of morality, with skill to perform the necessary household tasks, ought to comprise the whole range of their acquirements. One author, indeed, referring to the frequent complaint of the husband that he finds very little gratification in the society of a partner whose mental resources are so small, seems to advise that he should teach her something, and encourages him by the remark, that even monkeys can be taught to play antics; but in this instruction nothing intellectual can be intended, since he concurs with other moralists, in declaring that she ought never to open a book. The Chinese, have, however, several female writers, whose learned works they hold in high esteem. To beguile the many tedious and heavy hours which must unavoidably occur to secluded females, thus totally unqualified for mental pursuits, the tobacco-pipe is the usual expedient. Every female from the age of eight or nine years, wears as an appendage to her dress, a small silken purse or pocket to hold tobacco, and a pipe, with the use of which many of them are not unacquainted at this tender age. Some, indeed, are constantly employed in working embroidery on silks, or in painting birds, insects, and flowers, on their gauze. "In the ladies' apartments, (says Mr Barrow,) of the great house in which we lived at Pekin, we observed some very beautiful specimens of both kinds in the pannels of the partitions, and brought home a few articles, which I understand have been much admired; but the women who employ their time in this manner, are generally the wives and daughters of tradesmen and artificers, who are usually the weavers both of cotton and silk. I remember asking one of the great officers of the court, who wore a silken vest beautifully embroidered, if it was the work of his lady; but the supposition that his wife should condescend to use her needle, seemed to give him offence."

Mr Abeel says that the appearance of the Chinese at Canton, differed in some respects from his preconceived notions. The most striking peculiarities to the stranger, he tells us, are the great variety of complexion, the general flatness of face, and uniformity of features, and especially the strange formation of the eye, not only with the internal angle curved, but with the lid in many cases so small, as to appear not adapted to its natural functions. "This last peculiarity is most remarkable among children. The lid appears unnaturally distended when the eye is open; at the same time it covers so much of the ball of the eye, as to produce the impression that the latter is uncomfortably confined. With the exception of the occiput, the heads of the men are shaved; while, if its luxuriance will admit, it is permitted to grow until it comes in contact with their heels. It is generally worn in a pendant plait,—the cords with which it is woven frequently supplying the deficiency of its length. It is quite a comment on fashion—"old custom," as the Chinese term it,—to associate with the popularity and prevalence of the one here described, the recency of its date, and the reproach of its origin. Upon the Tartar conquest, not two centuries ago, the Chinese were compelled to adopt this style of wearing their hair as a mark of subjugation. Many considered it such a disgrace that they preferred losing their heads to their hair. Now it has become an ornament and a mark of proud distinction. The girls wear the long plait according to the fashion of the men, but do not shave the other parts of the head. After marriage, the hair is braided upon the head, and decked with a profusion of flowers and jewels answering to the rank or means of the possessor. The ordinary style of dress differs but little in both sexes. It consists of loose pantaloons, and an over-garment or robe with long dangling sleeves, and which varies in length from the knee to the ground. Their girdles, like those of the Jews, frequently answer the purpose of purses. The stocking has no reference to the shape or size of the limb, and the shoe has a thick clumsy sole turning up in front, and destitute of elasticity to aid the step."

The Chinese take a passionate delight in their poetry, such as it is. They have poems on almost

every possible subject. History, chronology, moral maxims, the laws and precepts of Confucius, agriculture, gardening, and all the peaceful arts, are conveyed and impressed on the memory through the medium of poetry. In their more refined society not to be a poet, is not to be a gentleman; and the love, if not the practice, of the poetical art descends to all grades and conditions.

The barbers, in the towns of China, go about ringing bells to get customers. They carry with them a stool, a basin, a towel, and a pot containing fire. When any person calls them, they run to him; and planting their stool in a convenient place in the street, shave the head, clean the ears, dress the eyebrows, and brush the shoulders;—all for the value of little more than a halfpenny. They then ring the bell again, and start in pursuit of another customer.

*Trade with China.* Almost the whole trade of foreigners with China is restricted to the single port of Canton. The Spaniards have still access to the port of Amoy on the eastern coast of China, but the privilege is said to be merely nominal, and very rarely used. The Portuguese carry on a very trifling commerce at Macao, where they have been allowed by the Chinese to form a settlement, subject, however, to great restrictions. The Russians have a land-trade with China, across the desert of Middle Asia, and on that account are not permitted to send any ships to Canton.

Canton is situated in lat. 23° 7′ 10″ N., long. 113° 14′ 30″ E.; and is built upon the left bank of the *Choo-keang*, a river which flows through it in a stream rather wider than the Thames at London bridge, and after an additional course of thirty-two miles, empties itself into a broad bay, or opening, of the great sea which washes the southern provinces of China. The entrance of this bay, which is sometimes vaguely spoken of as the mouth of the river of Canton, is about eighty miles from the city: it contains a number of small islands, among which is that partly occupied by the Portuguese settlement of Macao. At the head of the bay, fifty miles from its entrance, is the mouth, properly speaking, of the Choo-keang, or river upon which Canton stands: it is formed by two projecting points of land, which are little more than a musket-shot apart. This narrow passage is called by Europeans *Bocca Tigris*, or "Tiger's Mouth,"—a name originally given to it by the Portuguese, who were the earliest traders in these parts; in nautical phrase it is sometimes styled the *Bogue*. Twenty miles up the river is Whampoa, which may be called the "road" of Canton; foreign ships always anchor there, and never ascend further, their intercourse with the city for the remaining nine or ten miles being conducted entirely by boats.

Almost all Europeans at Canton carry on their business with the natives through the medium of the English language. Few foreigners study Chinese to any extent, and those few are chiefly scholars residing in Europe; but the Chinese at Canton find it to their interest to pick up a smattering of English, and are enabled by its means to make themselves understood by Europeans; but it is a strange jargon, made up of words grievously mispronounced, often oddly perverted from their proper meaning, and always combined according to the Chinese idiom. So extraordinary is the dialect thus produced, that an Englishman on his arrival at Canton understands little more of it than if it were French or Dutch, and finds that his own uncontaminated English is as little understood by the Chinese servant or shopkeeper. It requires a few week's practice to put him on a level with the natives, and he will then be able to speak a jargon as uncouth as any Chinaman.

The principal weights for merchandise at Canton are, the pecul, the catty, and the tale, the pecul being divided into one hundred catties, or one thousand six hundred tales. The catty is equivalent to one pound and one-third avoirdupois.

There are no commercial measures in China, all dry goods and liquids being sold by weight. Everything living or dead, organic or inorganic, is sold by weight in this celestial country; whether it be fruit or ballast-stones, oil or vegetables, living dogs or pigs, cats or poultry, they are all purchased by the catty. A Chinese does not seem to have any idea of measurement, for one was asked whether we should have much wind,—"Yes, plenty catties of wind, by, by, come;" and when some gentlemen were taking observations of the sun, the Chinese observed upon them that "they were weighing the sun." "In buying any article, however small or trifling, at Canton," says Mr Reynolds, "the seller will furnish you with a small paper, containing some Chinese characters, which are called *chops*. If called on by the custom-house officer, or mandarin, to pay duty on these articles, you simply present them with the chops, and it is their business to find the merchant who sold the article, and collect the revenue from him."

The word *Hong* is used by the Chinese to designate a commercial establishment or warehouse; and by this name the European factories at Canton have been designated. The hongs extend along the bank of the river between seven and eight hundred feet; they extend backwards in depth a hundred and thirty yards, into a long narrow lane, on each side of which are confined the abodes of foreigners. To the eastward, the line of factories is bounded by a narrow ditch or inlet from the river, serving to surround a portion of the city-wall, and to drain that portion of the town. All the factories communicate with the river by wooden stairs, from which the tea and other commodities are embarked; and the space which they occupy is traversed by three thoroughfares, leading direct from the river,—namely, China Street, New China Street, and Hog Lane,—the latter being a narrow filthy passage, inhabited by low Chinese, who keep spirit-shops, into which they entice the sailors, and rob them.

The Portuguese were the first Europeans who traded direct to China. They visited various ports of the country for sometime free from the competition of other nations; and in 1555, they appear to have concentrated themselves at Macao, where they established a settlement. We hear of their ships frequenting the port of Canton in 1578, and trading along the coast of China; but in 1631, in consequence of some disputes which had arisen with the natives, they were restricted to their own settlement at Macao. Until the year 1637, the English trade with the Chinese was carried on indirectly, at the factories which the East India company had established in other parts of the East. In 1664, the trade in tea commenced, that article being imported to the amount of one hundred pounds. On the 13th of February, the directors wrote thus to Madras: "In regard *thea* is grown to be a commodity here, and we have occasion to make presents therein to our great friends at court, we

would have you send us yearly five or six canisters of the very best and freshest thea. That which will colour the water in which it is infused most of a greenish complexion, is generally best accepted." The import for general use had, it appears, been chiefly a private concern of the officers; but the market had thereby been so much over-stocked, that "trash thea from Bantam" had been sold for 4d. and 6d. a-pound. The trade was now, therefore, to be carried on altogether by the company themselves. Its progress, however, was severely checked by the imposition, in 1689, of an enormous duty of 5s. a-pound, which rendered it impossible to introduce with advantage any teas except those of the very finest description. In 1693, the staple commodities are said to have been Nanking silks, damasks, satins, velvets, gold thread, raw-silk, China and lacquered ware, a good quantity of fine tea, some fans and screens. In 1699, there were ordered 300 tubs (chests) of the finer green teas, and eighty of bohea.

In 1701, Chusan, Amoy, and Canton, were the ports with which the company's trade was carried on; the first was deemed the most desirable, but they were compelled to quit it the following year, though afterwards induced to return. The company soon, however, acknowledged that "they were weary of the trade to Chusan and Amoy;" and they seem at one time to have intended to forsake those ports, and use Banjarmassin, in the island of Borneo, as a depôt. It was found, however, that at Canton the traffic could be conducted on a considerable scale; the factors were, indeed, exposed to many hardships, and had ground for heavy complaints, but the increasing importance of the tea-trade made the company willing to encounter many difficulties.

In 1715, the intercourse with Canton, according to Mr Auber, had assumed somewhat of the character of a regular trade. At stated seasons ships were despatched from England, each having a supercargo, to conduct the sales and purchases. These vessels proceeded first to Macao, and thence to the Bocca Tigris, where the supercargoes were admitted to an audience with the hoppo, or Chinese commissioner of customs, with whom they stipulated for certain privileges, such as the enjoyment of free trade with all Chinese, without distinction, liberty to hire Chinese servants, to purchase provisions, &c., for their factory and ships, and other similar articles.

In 1736, the emperor, Këën-lung, (who reigned till 1796,) ascended the throne, and the year of his accession was marked by the abolition of an oppressive duty of 4 per cent.,—although the boon was coupled with conditions utterly inadmissible, and which the Chinese were therefore bribed to connive at the neglect of. About this time, also, commenced the security-system, from which the British trade has so severely suffered. A few merchants, called the Hong, were nominated, one of whom was required, on the arrival of every English ship, to become security for the regular payment of the duties; in return for which the representatives of the company were obliged to allow him a corresponding advantage. These persons, burdened by the above obligation, and having also £10,000 to remit in presents to the imperial court, found it necessary to indemnify themselves by an exorbitant price laid on the commodities.

The increased annoyance to which the English trade at Canton was exposed, led the company to seek to re-open the communication with Amoy. But they found their condition still worse at that port; and were prevented from continuing the attempt, if they had been disposed to do so, by the decree which Këën-lung issued in 1757, strictly limiting the intercourse of Europeans to Canton. This made no change in the actual course of the English trade, which had long centred in that port; yet it acted unfavourably on the interest of the factory. Hitherto, amid all their grievances, the threat of removing to another, and thus depriving the mandarins of the emoluments which they derived from the traffic, had been used with the most beneficial effect. Now, the only menace left to them was, that of quitting China altogether,—a design which neither party could believe to be seriously entertained.

In 1759, two years after Canton had obtained a monopoly of the trade, when the authorities were no longer restrained by the apprehension that foreigners would resort elsewhere, the limitation of our dealings to a few licensed Chinese was made part of the established system of trade, and those individuals, designated Security or Hong merchants, were regularly incorporated under the name of the "Cohong," with whom Europeans were permitted to deal; all transactions with other Chinese, excepting, indeed, petty shop-keepers, being declared illegal.

In 1771, the supercargoes congratulated themselves on having procured the dissolution of this obnoxious cohong, at the cost of 100,000 taels, (from £30,000 to £35,000,) which they actually expended on the occasion. In 1779-80, however, the same cohong appears again in full operation, and was made the instrument, as it has continued ever since, of levying an additional tax on foreign trade, under the designation of Consoo Fund.

In the year 1833 an act was passed providing that the exclusive trade to China enjoyed by the East India Company should cease, from April 22, 1834, the company, indeed, being obliged to close all their commercial transactions from that day. In the same year another act was passed, regulating the manner in which the open trade, thus permitted, should be carried on; and this act provided for the appointment of a superintendant of the China trade; to whom, residing in China, were granted the powers deemed necessary for the purposes of commerce. The first person appointed to this office was the late lord Napier, a captain in the navy; who received instructions to repair to Canton, for the purpose of discharging its duties. On the 14th of July, 1834, his lordship arrived, in the Andromache, at Macao; and soon after sailed for Canton, which he reached on the 25th.

Before lord Napier's arrival at Canton, all his movements had been closely watched by the Chinese government. A report was made that an English vessel of war, having on board a *barbarian eye*, (foreign officer of rank), had anchored at Cabreta Point, near Macao. Hereupon Loo, the governor of Canton, having understood that the English company was dissolved, and judging that this new officer was to supply the place of their tae-pan, or supercargo, issued an order that the hong-merchants should proceed to Macao, and ascertain what were the circumstances under which the trade was now to be conducted, and the regulations that would thence become necessary. Notice was given at the same time, that until a full report was made to the governor, and his consent obtained,

the superintendent, though he might reside at Macao, was by no means to present himself at Canton. In pursuance of this order, Hou-qua and Mou-qua, deputed by the hong, proceeded to Macao, but before they could reach that place, lord Napier had set out; and, notwithstanding all their efforts to overtake him, he arrived at Canton before them. Next day, a letter from him to the viceroy was presented at the city-gates, but was rejected on account of its not being in the form of a petition. The displeasure of the government was immediately manifested by the disappearance of all the native servants in the employ of the British.

A strong sensation was now created in the city, and a report was made to the hoppo, that on the 18th of the present moon, about midnight, "a barbarian ship's boat had arrived at Canton, bringing four English devils," who took up their abode in the factory. This being connected with the appearance of a British man-of-war in the outer seas, was represented as a clandestine stealing into Canton. The governor issued an order, declaring the impossibility, that in conformity to the laws of China, this new eye or officer could continue in that city:—"Even England has it laws; how much more the celestial empire! How flaming bright are its great laws and ordinances, more terrible than the awful thunderbolt! Under this whole bright heaven, none dares to disobey them. Under its shelter are the four seas. Subject to its soothing care are the ten thousand kingdoms." Actuated, however, by feelings of clemency, and allowing for the ignorance of national laws and customs incident to a stranger, he ordains, that if the latter, after having despatched the business on which he came, shall immediately return to Macao, and promise never to resort to Canton without special permission, the past offence will be overlooked.

The hong merchants tried all the means in their power to induce Lord Napier to give way; but his lordship having been refused access to the imperial officers, declined to communicate with the merchants. The latter, frustrated in all their endeavours, resolved to secure the good-will of their own government by proposing a suspension of the trade. By taking this course they obviated the suspicion of collusion, which probably induced the government to lay upon them so heavy a load of responsibility. In an elaborate mandate, issued by governor Loo, their conduct is declared to be most highly praiseworthy, "manifesting a profound knowledge of the great principles of dignity." Yet he does not proceed immediately to take the strong step recommended. He pretends, indeed, that the trade and the duties arising from it, "do not concern the celestial empire, to the extent of a hair or a feather's down." But knowing the divine wish of his great master to cherish both those within and those without, he was unwilling to involve thousands of the latter in ruin for the disobedience and obstinacy of one individual. He therefore allowed a short interval, that the barbarian eye, said to be "a man of very solid and expansive mind, and placid speech," might have an opportunity to reconsider his rash decision.

At length, on the 2nd of September, the long-threatened order for the entire suspension of the trade was issued. Its effects were immediately apparent. Fresh provisions could no longer be procured, and lord Napier and his suite were obliged to live on salt meat conveyed from the ships of war. Matters being thus brought to extremities, the resolution was taken to order up his Majesty's ships, Andromache and Imogene, which were anchored without the Bogue. The ships began to move on the 7th, and the forts defending the entrance of the river fired upon them. A contest ensued for an hour and three quarters, the time occupied in the winding passage of the channel, and the ships then anchored, in consequence of the state of the wind, until the 9th. On that day they proceeded on their way, and a contest again ensued with the forts on the shore, which, of course, were unable to prevent the passage of the vessels, though they occasioned the death of one man in each. On the 11th another order was issued, in which the former demands of the Chinese government were repeated, and the conduct of lord Napier severely stigmatized. Yet it was still intimated to him that, if he would repent of his errors and even then obey the laws of the empire, indulgence would be extended to him. It is unnecessary for us to detail the occurrences of the few days following, which rendered lord Napier's position a very difficult one. His difficulties too were increased by severe indisposition, caused by toil and anxiety. Under these circumstances, he shrunk from the calamities which would ensue from the continued suspension of intercourse, and on the 14th he announced his determination to yield, and to quit Canton. The ships of war, also, on the demand of the native government, were ordered to move out to Linton. Two chop boats were provided for lord Napier, in which he embarked on the 21st. They reached Heang-shang on the 23d, where they were detained two days amid a terrible beating of gongs and other noises, which severely aggravated his lordship's illness. They reached Macao on the 28th, where lord Napier expired on the 11th October. A re-opening of the trade took place on the 27th of December following.

The results of the first four years' experience of the free trade to China have more than justified the anticipations of those who expected the greatest success from the abolition of the monopoly. At an average of the three or four years preceding the dissolution of the Company's charter, their average annual imports of tea amounted to about 31,500,000 lbs. a year; but in 1833-34, the last year of the charter, the imports were only 29,592,310 lbs. The year 1835, the first year of the free trade, presents a very different result; the imports having amounted to 43,000,000 lbs., exceeding by above 10,000,000 lbs., or 30 per cent., the Company's imports when largest! We subjoin an account of the quantities of tea imported into the united kingdom, the quantities retained for consumption, and the nett revenue derived from the same, in 1834, 1835, 1836, 1837, and 1838.

| Years. | Imports. | Exports. | Retained for Consumption. | Net Revenue. |
|---|---|---|---|---|
| | *lbs.* | *lbs* | *lbs.* | £ |
| 1834 | 33,643,980 | 1,181,005 | 34,969,651 | 35,89.36! |
| 1835 | 44.360,550 | 2,158,029 | 36,574,004 | 3,832.427 |
| 1836 | 49,307,701 | 4,269,863 | 49,142,236 | 4.674.535 |
| 1837 | 36 973,981 | 4,716,248 | 30.625,206 | 3,223,840 |
| 1838 | 39,887,441 | - - | 32,366,412 | |

The excess of the quantity retained for consumption in 1836 was occasioned by the change in the duties that year, which made it necessary to enter all the heavy stock of bohea then in bond, in order to escape the duty of 2s. 1d. to which it would otherwise have become liable.

*Account of the Quantity and Value of the different Sorts of* INDIAN OPIUM *imported into China during the Nine Years ending with* 1835-36.

| | Patna. | | Benares. | | Malwa. | | Total. | |
|---|---|---|---|---|---|---|---|---|
| | Chests. | Value. | Chests. | Value. | Chests. | Value. | Chests. | Value. |
| | | *Dollars.* | | *Dollars.* | | *Dollars.* | | *Dollars* |
| Season 1827-28 | 4,006 | 4,019,350 | 1,128 | 1,105,805 | 4,401 | 5,299,920 | 9,535 | 10,425,075 |
| — 1828-29 | 4,831 | 4,574,650 | 1,130 | 1,029,585 | 7,171 | 6,928,880 | 13,132 | 12,533,105 |
| — 1829-30 | 5,554 | 4,820,448 | 1,579 | 1,329,129 | 6,857 | 5,907,580 | 14,000 | 12,057,157 |
| — 1830-31 | 5,085 | 4,454,809 | 1,575 | 1,335,395 | 12,100 | 7,114,059 | 18,760 | 12,904,263 |
| — 1831-32 | 4,442 | 4,234,815 | 1,518 | 1,448,194 | 8,265 | 5,818,574 | 14,225 | 11,501,584 |
| — 1832-33 | 6,410 | 5,115,126 | 1,880 | 1,455,603 | 15,403½ | 8,781,700 | 23,703½ | 15,352,429 |
| — 1833-34 | 7,893 | 5,023,175 | 1,642 | 1,066,459 | 11,715 | 7,916,971 | 21,250 | 14,006,605 |
| — 1834-35 | 7,558 | 4,368,245 | 2,549 | 1,427,604 | 9,982 | 5,962,930 | 20,089 | 11,758,779 |
| — 1835-36 | 9,011 | 6,713,196 | 2,006 | 1,407,510 | 15,002 | 8,986,198 | 26,018 | 17,106,903 |

The use of opium, for the purpose of exhilarating the spirits, has long been known in Turkey and Syria, but in those countries the poisonous drug is either taken as a pill or chewed after the manner of tobacco. In China, however, the mode of using it commonly adopted is that of smoking, although there are some few who use it in much the same way as it is used in Turkey and Syria. The following is the manner in which it is prepared:—The opium is imported into China in a crude state, the packages of it having attained a certain degree of consistency; those packages are dissolved in hot water, and the extract thus obtained is dried, and smoked through a pipe. Its effects, when taken in this way, are precisely analogous to those of swallowing it in its crude state. Opium shops are to be found in all the streets of China, just as public-houses and gin palaces are to be seen here, and the wretched victims of this degrading vice, fleeced of their all, are to be seen hanging their heads at the doors of these shops, and in many cases, shut out from their dwellings by angry relatives or ruthless creditors, are left to die unpitied and despised in the streets. A native artist, named Sunqua, residing in China-street, Canton, has executed some paintings on rice paper, which, forming a series, six in number, and which, in fact, are an exact counterpart of Hogarth's famous Rake's Progress. The design of these pictures is to show the progress of the opium smoker from health and prosperity to misery and degradation. The first of these pictures represents a you g man, the son of a gentleman of fortune, richly attired, and in all the freshness and vigour of youth. On his right is a chest of treasure, gold and silver; and on his left a personal attendant, constantly employed in preparing the crude article purchased and brought to the house for his use. In the second of these pictures he is reclining on a superb sofa, with a pipe in his mouth, surrounded by courtesans, two of whom are young, in the character of musicians. His money now flies without any regard to its amount. The third of these pictures represents him, after a short period of indulgence, with a countenance sallow and haggard, with high shoulders and naked teeth, and moping on a very ordinary couch, with his pipe and other smoking apparatus lying by his side. At this moment his wives, or his wife and a concubine, come in; the first, finding the chest emptied of its treasure, stands frowning with astonishment, whilst the second gazes with wonder at what she sees spread on the couch. In number four his houses and lands are all gone, his couch is exchanged for rough boards and a ragged mattress, his shoes are off his feet, and his face is half awry, as he sits bending forward and breathing with great difficulty. The fifth represents him scraping together a few copper cash, with which he hurries to one of the smoking houses to buy a little of the scrapings from the pipe of another smoker, to allay his insatiable cravings. In the last of these pictures he appears as a confirmed sot, sitting upon a bamboo chair, continually swallowing the fæces of the drug, so foul that tea is required to wash them down, his wife and child seated near him, and, by winding skeins of silk from bamboo reels, earning for themselves and him the means of dragging out a miserable existence. These pictures are to be considered, not as the result of a singular notion in the mind of an isolated individual, but as indications of the general sense of a large class of the community in reference to this degrading vice.

The extent to which this pernicious drug has been introduced into China by our own countrymen during the last twenty-one years has been such as to show a ten-fold increase. The mode of cultivating it in India is thus described. The ryot, or immediate cultivator of the soil, selects a piece of ground, which, by repeated ploughings, he makes completely fine, removing all the weeds and grass. The field is then divided into squares, with dykes running in all directions, lengthways and crossways. A pit or sort of well is dug at one end of the field, from which, by a leathern bucket, water is raised into one of the principal dykes, and in this way is conveyed into every part of the field, as required. The seed is sown in November, and the juice is collected in February and March, usually during a period of about six weeks. As soon as the plants spring up, the weeding and watering commence, and are continued till the poppies come to maturity. Perpendicular cuts or scratches are then made in the rind of the bulbous head, from which the juice exudes, which is daily collected, and delivered to the local officers. The East Indian government annually enters into an engagement with the ryots or cultivators, through an intermediate agency, constructed in the following manner:—There is first a collector, who is a European; secondly, there are gomastahs, a superior class of men, both in education and caste; thirdly, sudder mattu, a respectable class of landholders; fourthly, village mattu, the principal villagers, a little superior to the ryots; and fifthly, the ryots, the chief labourers in the cultivation of the poppies. The engagement entered into with government is this: when the poppy is ripe, and immediately before the period of extracting the juice, the gomastah and his establishment make a circuit of the country, and form, by guess, a probable estimate of the produce of each field. He then makes the ryot enter into an engagement to deliver the quantity estimated, and as much more as the field

will produce, at the price previously fixed; and if he fails to deliver the estimated quantity, and the collector has reason to suspect him of embezzlement, he is empowered by law to prosecute the ryot in the civil court for damages. The quantity of opium thus grown, under the sanction of the East India Company, and imported into China from the year 1816 to 1836, is given by the Rev. W. H. Medhurst, in his work on the state and prospects of China, in the following tabular form:—

| | Chests. | Value. |
|---|---|---|
| In 1816 | 3,210 | 3,637,000 dollars. |
| 1820 | 4,770 | 8,400,800 — |
| 1825 | 9,621 | 7,608,205 — |
| 1831 | 18,760 | 12,900,031 — |
| 1832 | 23,670 | 15,338,160 — |
| 1836 | 27,111 | 17,904,248 — |

In a note Mr Medhurst adds, that during the year ending in the spring of 1837, 34,000 chests were imported, and the deliveries during the month of July, of the same year, amounted to 4,000 chests.

This quantity of opium, thus grown in India, and annually imported into China, appears large, but, what is surprising in reference to it is, that every one of these chests are smuggled into the celestial empire. As early as the year 1796 the evils resulting from the practice of smoking opium had awakened the attention of the Chinese government, and the practice was accordingly forbidden under penalties which have been continually increasing in severity. In 1821 the Hong merchants of Canton were called upon to give securities that no opium was contained in any of those vessels which were permitted to enter the harbour of Canton, and discharge their cargoes there. Nay, so fully were the East India Company convinced of the importance of carrying on their regular trade with China with clean hands, that any one of their regular captains, or officers, who had brought with him to Canton a single chest of opium, would have been instantly and for ever dismissed from the Company's service. All the opium, therefore, which is now, or which has been for the last forty-three years, introduced into China by us, has been smuggled into the country in defiance of the laws and regulations of the Chinese government.

A few extracts from some authentic documents will serve to show the light in which the people of this country are viewed as engaged in this traffic, as also the desire of the government of China to effect its suppression. The following is from the memorial of Heu Naetse, an officer of the local courts of Pekin, addressed to the emperor:—"In the first year of Keaking, 1796, those found guilty of smoking opium were subject only to the pillory and bamboo. Now they have, in the course of time, become liable to the severest penalties—transportation in various degrees, and death after the ordinary continuance in prison. Yet the smokers of the drug have increased in number, and the practice has spread almost throughout the whole empire. In the year of Keaking there arrived, it may be, some hundreds of chests annually. The number has now increased to upwards of 20,000 chests, containing each an hundred catties. The total quantity sold during the year, amounted in value to ten and some odd millions of dollars; so that, in reckoning the dollar at seven mace standard weight of silver, the annual waste of money somewhat exceeds ten millions of taels. Formerly the barbarian merchants brought foreign money to China, which, being paid in exchange for goods, was a source of pecuniary advantage to the people of all the sea-board provinces; but latterly the barbarian merchants have clandestinely sold opium for money, which has rendered it necessary for them to export foreign silver. Thus foreign money has been going out of the country while none comes into it." This memorial was presented on the 2d of July, 1836, and an imperial edict was issued for inquiry into the subject. The great object, it will be seen, which Heu Naeste had in view was to prevent the opium from being clandestinely brought in, and the money of the country by that means from being drained off.

Choo-Tsun, member of the council of the board of rites, in a memorial addressed to the emperor about the same time, took another view of the matter, and prayed for the suppression of this iniquitous traffic as a great injury to the army and to the people at large. "To sum up the matter," he says, "the wide-spreading and baneful influence of opium, when regarded simply as injurious to property, is of inferior importance; but when regarded as hurtful to the people, it demands most anxious consideration; for in the people lie the very foundation of the empire. Property, it is true, is that on which the subsistence of the people depends, yet a deficiency of it may be supplied, and an impoverished people improved; whereas it is beyond the power of any artificial means to save a people enervated by luxury. In the history of Formosa we find the following passage:—'Opium was first produced in Kaoutsinne, which by some is said to be the same as Kalapa of Batavia. The natives of this place were at first sprightly and active, and, being good soldiers, were always successful in battle; but the people called Hung-maou (red-haired) came hither, and having manufactured opium, seduced some of the inhabitants into the habit of smoking it. From these the mania for it rapidly spread throughout the whole nation, so that, in process of time, the natives became feeble and enervated, submitted to the foreign rule, and were ultimately subjugated.' Now, the English are of the race of foreigners called Hung-maou. In introducing opium into this country their purpose has been to weaken and enfeeble the celestial empire. If not early aroused to a sense of our danger, we shall find ourselves ere long on the last step towards ruin."

Many memorials of a similar kind were addressed to the head of the celestial empire on this subject, and early in the year 1839 the most active measures were taken for the suppression of the trade, by the Chinese government seizing the opium at Canton, and imprisoning many British merchants. That the government of China has a right to seize any article of traffic which may be smuggled into the empire, in defiance of express edicts, is undoubted; but what steps Britain may take regarding the imprisonment of her subjects, most of whom, it is said, had no connection with the opium trade, remain to be seen.

CHINCHILLA; a species of field-rat, in great estimation for the extreme fineness of its wool, if a rich fur, as delicate as the silken webs of the garden-spiders, may be so termed. It is of an ash gray, and sufficiently long for spinning. The little animal which produces it is six inches long from nose to the root of the tail, with small pointed ears, a short muzzle, teeth like the house-rat, and a tail of moderate length, clothed with a delicate fur. It lives in burrows underground in the open country, in the northern provinces of Chili, and is

very fond of being in company with others of its species. It feeds upon the roots of various bulbous plants, which grow abundantly in those parts, and produces, twice a year, five or six young ones. It is so docile and mild in temper, that if taken into the hands it neither bites nor tries to escape, but seems to take a pleasure in being caressed. If placed in the bosom, it remains there as still and quiet as if it were in its own nest. This extraordinary placidity may possibly be rather due to its timid nature. As it is in itself peculiarly cleanly, there can be no fear of its soiling the clothes of those who handle it, or its communicating any bad smell to them, for it is entirely free from that ill odour which characterizes the other species of rats. For this reason it might well be kept in the houses with no annoyance, and at a trifling expense, which would be abundantly repaid by the profit on its wool. The ancient Peruvians, who were far more industrious than the modern, made of this wool coverlets for beds and valuable stuffs.

The beautiful fur of the chinchilla, which exceeds in warmth and softness that of any other animal, has long been known as an expensive and useful article in the dress of ladies; but, well known as it was in commerce as a valuable fur, no information had been obtained as to the animal that furnished it, until within these few years. The first chinchilla that arrived alive in England was brought by the late expedition to the north-west coast of America, under the command of captain Beechey, and was presented by him to the Zoological society.

CHIPPENHAM; a market-town in the county of Wilts, situated on the south bank of the Avon, by which it is nearly surrounded, and over which is a fine stone bridge of twenty-two arches. There are a few grist mills, and the tanning of leather is carried on upon a large scale, but the business of the town seems to arise principally from its being a great thoroughfare on the Bath and Bristol roads, having, too, the advantage of the Wilts and Berks canal, which passes close by the town. Distant from London ninety-three miles W.; from Bath thirteen E.N.E. Population in 1841, 5438.

CHORLEY; a market-town of Lancashire, situated in the middle of the county, thirty-two miles S.E. from Lancaster, on the great turnpike road between Liverpool and Preston, near the source of a rivulet called the Chor, which after flowing through some pleasant and picturesque valleys, falls into the Yarrow, a large stream which encircles the southern extremities of the township. The townhall is a neat modern structure, the lower part of which is used as an open market, which is well supplied with provisions. The increase of population has latterly been great, owing to the spirit with which the cotton manufacture in all its branches has been carried on here. There are numerous printing and bleaching establishments in the vicinity of this town. Population of town and parish in 1841, 13,139.

CHURTON, Ralph, Archdeacon of St David's, Rector of Middleton Cheney, Northamptonshire, F. S. A., was born in the parish of Malpas, Cheshire, Dec. 8, 1754. He lost his parents, who were in humble circumstances, early in life; but by archdeacon Townson's recommendation, he was entered at Brazen Nose in 1772; and the same generous hand contributed one half towards his academical expenses. In 1778, he was elected a fellow of his college; in 1785, he was chosen Bampton lecturer; appointed Whitehall preacher, by bishop Porteous, in 1788; in 1792, his kind friend and benefactor, Dr Townson, lived to see him presented by his college to the living of Middleton Cheney;—and in 1805 he was collated to the archdeaconry of St David's, by bishop Burgess.

The archdeacon was the author of a numerous list of works, chiefly in divinity and ecclesiastical biography, bearing the impress of a conscientious devotedness to principle, under the guidance of a cultivated taste and a sound understanding. The titles of the principal of these are as follows:—1. Bampton Lectures; eight Sermons on the Prophecies relating to the Destruction of Jerusalem, preached before the University of Oxford. 1785, 8vo. 2. A Memoir of Thomas Townson, D.D., Archdeacon of Richmond, and Rector of Malpas, Cheshire, &c. prefixed to "A Discourse on the Evangelical History from the Interment to the Ascension," published after Dr Townson's death by John Loveday, Esq., D. C. L.: Oxford, 1793. This memoir has been wholly or in part thrice reprinted; in 1810, prefixed to an edition of Townson's whole Works, 2 vols. 8vo.; in 1828, with a private impression of "Practical Discourses," by the late archdeacon Townson, edited by the present distinguished and venerated bishop of Limerick; and in 1830, with the same Discourses published by Messrs Cochran and Duncan. 3. A Short Defence of the Church of England, &c., addressed to the Inhabitants of Middleton Cheney, Northamptonshire: Oxford, 1795. 4. An Answer to a Letter from Francis Eyre, of Warkworth, Esq., on the "Short Defence," &c.: Oxford, 1796. 5. A Postscript to an Answer to Francis Eyre, Esq., occasioned by his late publication, entitled A Reply to the Rev. R. Churton, &c.: Oxford, 1798. 6. Another Postscript to the same: 1801. 7. A Letter to the Bishop of Worcester, occasioned by his Strictures on Archbishop Secker and Bishop Lowth, in his Life of Bishop Warburton: Oxford, 1796. 8. The Lives of William Smyth, Bishop of Lincoln, and Sir Richard Sutton, knight, Founders of Brazen Nose College, Oxford: 1800. 8vo.—To this work a Supplement was published in 1803. 9. The Life of Alexander Nowell, Dean of St Paul's, &c.: Oxford, 1809. 8vo. 10. The Works of Thomas Townson, D.D., with an account of the Author, an Introduction to the Discourses on the Gospels, and a Sermon on the Quotations in the Old Testament: 1810. 2 vols. 8vo. 11. Several detached Sermons on various occasions.

The last publication from his pen was a short Memoir of his friend, Dr Richard Chandler, prefixed to a new edition of his "Travels in Asia Minor and Greece." 2 vols. 8vo. Oxford, 1825.

Archdeacon Churton married, July 11, 1796, Mary Calcot, of Stene in Northamptonshire, and had eight children. In private life, he was a zealous and unchanging friend, and most exemplary in all his domestic and social duties. His diligence as a parish priest was unremitting: during an incumbency of nearly forty years in a poor and populous village, he was never for any continuance absent from his parish. To purposes of charity and literature he was ever ready to devote a portion of an income which was far from abundant. Though his knowledge was most extensive, he had nothing of the pride of learning; and, in his addresses to his country congregation, he spoke a language which the poorest could comprehend. He died on the 23d of March, 1831; aged seventy-six.

CINCHONINE; a vegetable alcali, found along with quinine, in the several species of Peruvian bark. It exists, along with a little quinine, in the pale bark; with an equal proportion in the red bark, and in very small quantity, with much quinine, in the yellow bark. It may be extracted by the same methods as quinine, from which it is separated by its easy crystallisation. It is bitter and febrifuge, but is less used than the sulphate of quinine, which is much cheaper. See *Bark*.

CINQUE PORTS, (*a.*) certain English ports, on the coast of Kent and Sussex, bound, on condition of certain privileges, to furnish the sovereign, when called on, with a considerable naval force.

During the period of Roman dominion in Britain, it was found necessary, in consequence of the incursions of the pirates then infesting the northern seas, to unite a certain number (nine,) of the ports, under the governance of an officer, for the better defence of the coast. This system was continued by the Saxons, who, however, only incorporated five ports for this object; though, as there is no charter in existence prior to the reign of Edward I., some writers have assumed that they did not exist as a corporation until then. From the mention of Dover, Sandwich, and Romney in the Domesday Book, as privileged ports, and from various concurring circumstances, the date of their original incorporation may be assigned to the early period we have alluded to.

Our early history affords abundant evidence of the eminent services and high importance of the Cinque ports, both in times of war and of peace. During the former, they were for many centuries the chief arm of our naval power, whilst they greatly promoted the defence of the districts adjoining the coast during the latter. The arduous, and almost incessant, duties which they were bound by charter to perform, tended, in no inconsiderable degree, to foster the growth of hardy and experienced seamen; and their history, consequently, abounds with splendid instances of naval gallantry. In return for these services, various privileges and immunities were granted them from time to time; and it has been well observed, that, "in almost every reign, the pages of history show with how great honour and reputation the ports discharged the sacred trust reposed in their valour, skill, and bravery, by their confiding country."

In conformity with their general name, there are five head, or incorporated ports,—Hastings, Sandwich, Dover, Hythe, and Romney; but no less than thirty other places are severally united with, and participate in their privileges, as members of the original incorporation, and amongst which we may mention Margate, Ramsgate, Rye, Winchelsea, Folkestone, Faversham, Deal, and Walmer.

In order that they might efficiently maintain the free navigation of the channel, and protect the coast from foreign enemies and pirates, they were compelled constantly to keep up a considerable naval force, being obliged to furnish, when called upon by the crown, 57 ships, manned by 1197 men and 57 boys, at their own charge, for fifteen days at one time, after which it was in the power of the sovereign to keep them in commission for an unlimited period, at a stipulated rate of pay, which, however, was very insufficient to defray the heavy expenditure necessarily incurred. Notwithstanding this, there have been various instances where they contributed more than double the number of vessels required by their charter, thus incurring a heavy loss. In consideration of these services, however, the Cinque ports had many honours and privileges of great importance. "They were," we are told, "entitled to send two barons to represent them in parliament; they were, by their deputies, to bear the canopy over the king's head at his coronation, and to dine at the uppermost table, on his right hand, in the great hall; they were exempted from subsidies and other aids; their heirs were free from personal wardship notwithstanding any tenure; they were to be impleaded in their own towns, and no where else; they were to hold pleas and actions, real and personal; to have conveyance of fines, and the power of enfranchising villains; they were exempt from tolls, and had free liberty of buying and selling," with many other privileges.

At the period of the Norman conquest of England, the Cinque ports fleet was so formidable, that it was only in consequence of its absence on the northern coast of England, in pursuit of a Norwegian fleet, which it completely destroyed, that William was enabled to effect a landing on the British shores. Having learned that the ports fleet was making all sail from the north, the Norman sovereign was compelled to burn the greater part of his ships, to prevent their falling into the hands of the English. The Cinque ports rendered very eminent services at the period of the threatened invasion of the Spanish armada, on which occasion they fitted six new ships of large size, at a cost of £43,000.

The government and direction of these ports is intrusted to an individual of rank and consequence, who assumes the style and title of "lord warden, chancellor, and admiral of the Cinque ports;" an office which has frequently been held by heirs apparent to the throne. Amongst the personages of the blood royal, on whom the mantle of the lord warden has fallen, we may mention Harold II., before his accession to the crown: Odo, bishop of Bayeux, half-brother to William the Conqueror; Edward I., when prince of Wales; Henry V., when prince of Wales; Humphrey, duke of Gloucester, the youngest son of Henry IV.; Richard III., when duke of Gloucester; Henry VIII., before his accession to the crown; James II., when duke of York; and prince George of Denmark. The office has also been held by many individuals of high eminence, among whom may be mentioned William Pitt and the duke of Wellington. The salary is £3000 per annum.

The last charter for the government of the Cinque ports was granted by Charles II., in the twentieth year of his reign, which not only confirmed all preceding charters, but conferred additional privileges upon the freemen. This charter was subsequently confirmed by James II. But the glory of the Ports has long been of the past. Sandwich, once one of the most extensive and opulent ports in Britain, is now, partly from the ruin of its harbour, a small and insignificant borough; Winchelsea, which, in the time of queen Elizabeth, was styled by that princess, a "Little London," has experienced a similar reverse; Hythe was once so extensive and populous, as to contain seven parish churches; Rye and Romney are nearly desolate; and of all the Cinque Ports and their dependencies, most of which were signally safe and extensive havens, only Dover, Hastings, Margate, and Ramsgate, are now in a flourishing condition, nor does their prosperity result from any circum-

stance connected with their original privileges. The "decline and fall" of the Cinque ports from their ancient eminence, may be attributed to the ruin or injury of their harbours, by the long-continued recession or destructive effects of the sea; the abolition of their exclusive commercial privileges; and the alteration which has been made in the system of raising a maritime force. Their decay consequent on these changes, was progressive, though its results were not the least certain.

The court of the Cinque ports, for holding pleas, as well as the grand assembly of the same, was originally held at the Shepway-cross, near Limne, where the oath was administered to the lord warden on his induction into office. This high functionary is now generally sworn in at Bredenstone hill, to the south-west of Dover, opposite the castle, where the ancient court of Shepway was held, and most of the business relating to the Cinque ports transacted. In addition to the above, the lord warden also holds a court of equity, as chancellor, and a court of admiralty as admiral of the ports, which is generally kept in the church of St James at Dover. Walmer castle, about a mile to the north of Deal, has long been appropriated as the residence of the lord warden of the Cinque ports.

CIRENCESTER; an ancient town in the county of Gloucester, situated on the west bank of the Churn, a few miles from its confluence with the Thames, eighty-nine miles W. by N. from London. Cirencester is said to have been a town of some importance when Britain was occupied by the Romans, at which period its walls enclosed an area two miles in circumference. During the heptarchy it passed alternately into the hands of the kings of Wessex and Mercia, and was stormed by the Danes in 879. Canute held a parliament here. It was again stormed and dismantled by Henry III. in his wars with the barons, and in the reign of Henry IV., the lords Surrey, Salisbury, and others having taken up arms to restore Richard II., were assaulted and slain at an inn in the town by the bailiff and inhabitants, who sent their heads to London; in return for which good service the king granted them four does and six bucks annually, out of the forest of Bradon, a pipe of wine, and a charter of incorporation. Here was anciently a castle, and an abbey for black canons, established in 1117, by Henry I., on an old foundation, for prebendaries, which had existed before the conquest. Its abbot was a mitred one, and sat in parliament. Formerly the manufacture of woollen cloth was carried on here to a considerable extent, but the trade now is trifling. Population in 1831, 5420.

CLARKE, James Stanier, LL.D., F.R.S., canon of Windsor, rector of Preston cum Hove, Sussex, and deputy clerk of the closet to George IV.; was the eldest son of the Rev. Edward Clarke, rector of Buxted, in Sussex (son of the Rev. William Clarke, the intimate friend of Mr Bowyer, the learned printer; see Nichol's "Literary Anecdotes," vol. iv. p. 382.), by Anne, daughter of Thomas Grenfield, Esq., and brother to Dr E. D. Clarke, the celebrated traveller. He was of Jesus college, Cambridge, LL.B. 1805., LL.D. per Lit. Reg. 1816. He was for some years a chaplain in the royal navy, and was chaplain to Lord Nelson at the battle of Trafalgar. He afterwards distinguished himself as a preacher at Park street and Trinity chapels; and having been introduced by admiral John Payne to George IV., was for many years domestic chaplain and librarian at Carlton House, and honoured by the particular favour of his royal master. He was instituted to Preston in 1790, and he was also for some time rector of Coombs, Sussex, in the gift of the earl of Egremont. The following are the titles of Dr Clarke's publications: "Naval Sermons," preached aboard H.M.S. the Impetueux, 1798, 8vo. "The Progress of Maritime Discovery, from the earliest Period to the Close of the Eighteenth Century," 1803, 4to. "Falconer's Shipwreck, with a Life of the Author," 1804, 8vo. "Naufragia, or Historical Memoirs of Shipwrecks," 1805, 3 vols. 12mo. "Life of Lord Nelson," (in conjunction with John M'Arthur, Esq.), 1809, 2 vols. 4to. An abridgement of the same, 1810, 8vo. "Sermon at the Anniversary of the Sons of the Clergy," 1811. An edition of Lord Clarendon's Essays, 1815, 2 vols. 12mo. "The Life of King James II.," from his own Memoirs and the Stewart MSS. at Carlton House, 1816, 2 vols. 4to. (The prince regent had then appointed him historiographer to the king.) He was also the founder of the monthly miscellany called "The Naval Chronicle." He died Oct. 4. 1834, at Brighton.

CLIFTON. See *Bristol.*

CLITHEROE; a market-town of Lancashire, distant from Manchester thirty miles N., from Lancaster twenty-six S.E. It is situated at the foot of Pendle-hill, on the east bank of the Ribble. The business of the place is, generally speaking, the cotton manufacture, for the spinning, weaving, and printing of which there are extensive establishments both in the town and neighbourhood. The market-day is Tuesday. This place belonged originally to the family of Lacy, who erected a castle here sometime in the 12th century. This castle was bestowed upon Monk by Charles II., and dismantled by order of the parliament in 1649. A modern castle has been built within its precincts. The first charter of the borough, granted during the life-time of Henry de Lacy, who died about the middle of the 12th century, has been confirmed by many successive monarchs. By this charter the government was vested in two bailiffs, chosen annually by the burgesses out of their own body. Clitheroe sent, from the time of Elizabeth, two members to parliament, but was deprived of one member by 2° Will. IV. c. 45. and schedule B. Population in 1831, 5213.

CLONFERT; a parish, and the seat of a diocese, in the county of Galway, Ireland, containing 5915 inhabitants. A monastery is said to have been founded here, about the year 553, by St Brendan, who died on the 16th of May, 577, in the ninety-fourth year of his age. Moena, the successor of St Brendan, was the first bishop; and the treasures of the place frequently induced the Danes to visit it as an object of plunder. During the middle ages this church was famous for its seven altars; and the western front, erected by John, bishop of Clonfert in 1270, was remarkable for the delicacy of its workmanship. The present cathedral, which is both capitular and parochial, is an ancient and capacious structure. The see was united to Kilmacduagh in 1602; it extends thirty-seven miles in length and thirty-two in breadth, occupying an area of 215,000 acres, and reaching into the counties of Galway and Roscommon. The chapter consists of a dean, archdeacon, eight prebendaries, and a sacrist. The fifty-nine parishes in

the diocese are united into fourteen. The bishop's palace is adjacent to the village.

CLONMEL; a market-town and parish of Ireland, the latter partly in the county of Waterford, but chiefly in that of Tipperary. The town is situated twenty-three miles W. by N., from Waterford and eighty-two S. W. by S. from Dublin, upon the river Suir, which is navigable by large barges hence to Carrick and to Waterford. It consists of several good streets, a market-house, court-house, gaol, church, Roman Catholic chapel, and other public buildings; and has a handsome bridge of twenty arches across the Suir. It is a town of ancient foundation, built previous to the first Danish irruption, and originally protected by walls. Oliver Cromwell demolished the castle and fortifications after he became master of the place. The government of the town is vested in a mayor, sheriff, recorder, two bailiffs, and a town-clerk; the living is an entire rectory in the diocese of Lismore and arch-diocese of Cashel. The town returns one member to parliament. The manufacture of woollens used to be carried on here, but is now nearly extinct. A factory for weaving cotton has recently been established. There is a large carrying-trade of agricultural produce from this place to the seaport of Waterford, by means of the river Suir. The tide, which flows a little higher than the town, facilitates the inland navigation. Clonmel is a permanent military station, and the assize-town of the county of Tipperary. There are some extensive breweries and distilleries in Clonmel and the neighbourhood. The town is also head quarters for Mr Bianconi's extensive car establishment, and altogether has the air of a thriving district. Population of the parish 20,035, of which 13,505. are in the town. Lawrence Sterne was a native of Clonmel.

CLOWES, John, M. A., rector of St John's church, Manchester, a zealous apostle of the doctrines of Emanuel Swedenborg, was born in Manchester, Oct. 20, 1743, O. S., the fourth child of Joseph Clowes, Esq., barrister, who for many years practised in that town and its neighbourhood, and Katherine, daughter of a respectable clergyman named Edwards, rector of Llanbedar, near Ruthin, in Wales. He was educated at the grammar school of Salford; and at the age of eighteen was entered a pensioner of Trinity college. In the year 1766, when he took his degree, he was the eighth wrangler on the Tripos paper, proving that he was no ordinary proficient in mathematical attainments; and that he was equally distinguished as a classical scholar, is shown by his gaining one of the two prizes given by the members of the university to the middle bachelors, for the best dissertations in Latin prose; and again, the following year, when he was senior bachelor, the first prize for a similar dissertation. In the midst of this career of academical distinction, the church of St John, Manchester, then building at the sole expense of Edward Byrom, Esq., was offered him by the patron, which he accepted; and he continued its rector, refusing more than one offer of high preferment in the church, for the term of sixty-two years.

In the spring of the year 1773, he became acquainted with the theological writings of the hon. Emanuel Swedenborg. "The delight," he said, "produced in his mind by the first perusal of the work entitled '*Vera Christiana Religio*,' no language could fully express;" and from that hour he dedicated all his energies to the publication of these doctrines, both in the pulpit and by the press. For many years he was employed in translating them from the original Latin; and as each volume was translated, it was printed by a society established in Manchester under his auspices. This society led to the formation of another in London, which is still actively and busily engaged in printing and circulating the writings of the hon. Emanuel Swedenborg.

The literary labours of Mr Clowes were not, however, confined to translations; for he published at different times many other works on subjects connected with religion and philosophy, and all of them agreeing with the views of his favourite author; in whose sentiments he, to the last, entirely acquiesced. His manly and explicit avowal of these sentiments produced opposite effects: while in some it excited the spirit of persecution, in others it was the subject of approbation and delight. Such was the opposition at one time by a few of his parishioners, that secret attempts were made to dispossess him of his living: but the applications which were made for this end were rendered abortive by the bishop of his diocese, Dr Porteous, from his lordship's conviction of his virtues and piety; and his worst enemies in a few years were changed into admiring friends. Much obloquy was cast upon him in consequence of his retaining his living after his adoption of sentiments not in unison with the articles of the established church; but all this originated in perfect ignorance of the man, and of the motives of his conduct. It was not the emoluments of the church that bound him to the establishment, but the supposition that he could be more generally useful in the station which he was called to fill in the order of providence. He professed also a remarkable and strong attachment to the forms of the establishment. At one time he enjoyed sanguine but delusive expectations, that his opinions would be universally adopted in the established church, and he supposed that he should be able to bring in all the stray sheep into his fold; but he lived long enough to see that this was a hasty and a false conclusion. He certainly was the instrument by which this class of Christians became sufficiently numerous to form a separate denomination. During his lifetime they consisted of two parties, separatists and non-separatists. Those who attached themselves to the church of England, under the title of non-separatists, lost in him their centre and leader. To his labours they, however, stand indebted for the diffusion of those opinions not only in this country, but throughout Europe, in America, and in numerous parts of the world. If Swedenborg is to be considered as the founder of the sect, Mr Clowes, after him, must be considered as his chief apostle.

During the latter years of his life he resided wholly at Warwick, blessing, to the last moments of his consciousness, those around him, and blessed by all who came within the circle of his affections. He died May 29, 1831. His funeral took place on the 9th of June.

The following is a list of Mr Clowes's publications:—"An Affectionate Address to the Clergy of the United Kingdom of Great Britain and Ireland on the Theological Writings of Emanuel Swedenborg," 8vo. "Dialogues on the Nature, Design, and Evidence of the Writings of the hon. Emanuel Swedenborg, with a brief account of some of his Philosophical Works," 12mo. 1788.

"Letters to a Member of Parliament on the Character and Writings of Baron Swedenborg; containing a full refutation of all the Abbé Barruel's calumnies against the hon. Author," 2d edition, 8vo. 1799. "A Dialogue between a Churchman and Methodist on the Writings and Opinions of Baron Swedenborg," 8vo. "A few plain Answers to the Question, 'Why do you receive the testimony of Baron Swedenborg?'" 12mo. 1806. "Letter to the Christian Observer," in defence of the same, 8vo. 1807. "Letters to a Friend on the Divine Person and Character of Jesus Christ," 8vo. "On Mediums, their Divine Origin and important Uses, especially in the Regeneration and Salvation of Mankind," 8vo. 1814. "Pure Evangelical Religion Restored," 8vo. "The Spiritual Sum; its existence and operation proved from Scripture and Reason," 8vo. "The Parables of Jesus Christ explained," 18mo. 1816. "The Miracles of Jesus Christ explained," 18mo. 1816. "Scripture Histories, selected from the Old Testament," 18mo. 1817. "The true end and design of the Holy Sacrament," 12mo. "Letters to the Rev. John Grundy on the Unitarian Controversy," 8vo. 1817. "A Letter to the Rev. W. Roby on some passages in his Lectures," 8vo. 1820. "A second Letter, to the same, in reply to his pamphlet entitled, 'Anti-Swedenborganism,'" 8vo. 1821. "The Gospel according to Matthew, translated from the original Greek, and illustrated by extracts from the hon. Emanuel Swedenborg, 1819; St John's Gospel, on the same plan, 1819; St Luke's, 1824; and St Mark's, 1827." "The two Heavenly Memorialists; or Love and Truth stating to the Christian World their peculiar distresses, and imploring relief," 8vo. 1818. "On the two Worlds, the Visible and Invisible, their nearness to connection and operation on each other," 8vo. 1819. "A Treatise on Opposites, their nature, origin, and uses, as affecting both the Natural and Spiritual Life of Man," 8vo. 1821. "Christian Temper," 8vo. 1822. "The Twelve Hours of the Day," 8vo. 1823. "On Delights, their Origin, Variety, Uses, and Ends," 8vo. 1824. "Letters to a Friend on the Human Soul, its Immateriality and Immortality," 8vo. 1825. "Letters on the Human Body," 8vo. 1827. "On Science, its Divine Origin, Operation, Use, and End," 8vo. 1828. "Sermons preached at St John's church Manchester," 2 vols. 8vo. "Sermons on the Call and Deliverance of the Children of Israel out of Egypt," 8vo. 1803. "Sermons on the Parable of the Marriage of the King's Son," 8vo, 1812. "Short Dialogues on Creation and Redemption," 18mo. 1820. "Sermons on the Lord's Prayer and Ten Commandments," 8vo. 1821; on the Beatitudes, 8vo. 1825; on the Parable of the Ten Virgins," 8vo. 1828. "Religious Instruction for Youth," 2 vols. 18mo. "Family Prayers," 18mo. To which might be added a great variety of single sermons; and a translation from the Psalms, with notes and practical illustrations.

CLOYNE; a market-town of Ireland, and the seat of a diocese, is situated in the county of Cork, fourteen miles E. by S. from Cork, and 126 S.W. by W. from Dublin. It stands at a short distance from the eastern shores of Cork harbour, and is described as straggling and miserable; it consists principally of one street, the houses of which are of an inferior description. It is a place of considerable antiquity, as is likewise the bishopric of which it is the seat, its cathedral having been founded by St Colman, in the sixth century. The old name of the town is *Cluaine*, which signifies in Irish "a cave," and it is supposed to have been thus called, in consequence of the number of natural caverns and subterranean passages existing in the limestone-rock, of which the district is composed. Population of the town 2220; of the parish of Cloyne, 6410.

The chief object of interest at Cloyne is its *Round Tower*, one of those monuments of antiquity concerning whose origin and use so much darkness and perplexity exist, being variously supposed by different classes of antiquaries to have been,—the abodes of solitary anchorites,—the receptacles of a "sacred fire," worshipped by the primitive inhabitants of Ireland, after the fashion of the east,—places of temporary penance, — watch-towers erected by the Danes,—steeple-houses, and belfries.

The Round Tower at Cloyne stands in the street, on the side opposite to the church, and, as usual, near its western front. This singular structure sustained considerable damage from lightning in the middle of the last century; its height is stated to be ninety-two feet, and the thickness of its wall forty-three inches.

Adjoining the town is the bishop's palace, a plain edifice, which was built in the early part of the last century by bishop Crowe. It stands in a picturesque demesne, in which are the entrances to some of the natural limestone caverns abounding in this district. The ancient name of this spot was *Monelusky*, or "Field of Caverns;" and the names of the neighbouring fields and grounds, says Sir R. C. Hoare, "speak the savageness of this place in former times." Thus *Knocknamodree* is the "Hill of the Gray Dog, or Wolf;" *Park na Drislig*, the "Field of Briars;" *Monecranisky*, the "Meadow of the Wild Boars," &c. On the north of the town is a hill called *Bohermore*, or the "Great Highway," from a tradition that a road passed over it from the sea in the south to the sea on the north of the kingdom.

CLUTTERBUCK, Robert, B. A., F. S. A., a deputy lieutenant and magistrate for Hertfordshire, and author of the history of that county, was born at Watford, June 2, 1772. At an early age he was sent to Harrow school; and he continued there until he was entered as a gentleman commoner of Exeter college, Oxford. He subsequently took the degree of B. A.; and then entered at Lincoln's inn, intending to make the law his profession: but his ardour in the pursuit of chemistry, and in painting (in which he took lessons of Barry), induced him, after a residence of several years in London, to abandon his original plans. In the year 1798, he married Marianne, the eldest daughter of Colonel James Capper, of the Hon. East India Company's service; and, after a few years' residence at the seat of his father-in-law, Cathays, near Cardiff in Glamorganshire, he took possession of his paternal estate at Watford, where he continued to reside until his death. He there succeeded his father as a magistrate; and the impartiality and integrity with which he executed the duties of that arduous office, will be long remembered and appreciated by the inhabitants of Watford and its vicinity. During the intervals of these public duties, Mr Clutterbuck employed his active and well arranged mind in collecting materials for a new edition of Chauncy's History of Hertfordshire. These intentions he publicly announced in the Gentleman's Magazine, in 1809, but finding his manuscripts greatly accu-

mulated, and having fortunately purchased, in 1811, the genealogical collections for Hertfordshire made by the late Thomas Blore, Esq., F.S.A., he formed the resolution of publishing a completely new history of his native county; making such use only of Chauncy's materials as was to his purpose. In this object he steadily persevered for eighteen years; and the result was an elegant and complete history, in three folio volumes, which will always preserve his name in honourable connection with his native county. The first volume was published in 1816; the second appeared in 1821; and the third was published in 1827. The plates in this work have scarcely been surpassed in any similar publication, whether we consider the appropriateness of the embellishments, or the beauty and fidelity of their execution. Mr Clutterbuck himself possessed, as a draughtsman, the hand of a master; several of the plates were from sketches of his own: but his knowledge of art also enabled him to employ with great judgment the very first artists in their particular lines. Mr Clutterbuck died suddenly at Watford, May 25, 1831.

COAL, (*a.*) Soon after the Revolution, in 1688, a duty was imposed on coal brought coastwise into the port of London, in addition to the municipal charges with which it was burdened. During the last war, it was as high as 9s. 4d. per chaldron; but was reduced to 6s. in 1824. There was a drawback allowed on coal sent coastwise to Cornwall for the use of the mines. This drawback amounted, in 1829, to £16,148. There was no duty on coal sent coastwise from one part of Scotland to another; and the duty on that exported to Ireland was only 1s. 7¼d. per ton. After having, in the interval, undergone some modifications, the whole of these duties were totally abolished in 1831. The total sum received for the duty on coals amounted, in 1829, to £1,021,862; of which London contributed £464,599; Norfolk, £83,564; Kent, £52,549; Devonshire, £42,784; Hampshire, £37,813; Sussex, £36,295; Essex, £30,881; making, with other maritime counties, £847,266. In the same year, the duty on coal exported to Ireland amounted to £74,050. The chief ports of shipment were Whitehaven, Liverpool, Newport, Swansea, Irvine, Ayr, and Glasgow. Up to August, 1831, the duty on coal exported to British possessions was 1s. 6d. per chaldron, and to foreign countries 17s. per chaldron, Newcastle measure. (53 cwts.) Since that year, the duty on coal sent to foreign countries has been reduced to 3s. 4d. per ton; and on small coals 2s. A large increase in the exportation of coal has followed this measure. Ships that formerly used to leave this country with ballast, now take coal as a profitable cargo. Nor can this measure be considered injurious as hastening the exhaustion of the mines; for it is calculated, that in South Wales alone, there is a supply of coal sufficient to meet the present demand of the empire for 2000 years. In 1836 upwards of two and a quarter millions of tons of coals were shipped coastwise from Newcastle; and in 1837, the number of tons was 2,385,192, being an increase of 110,424 tons on the former year. There were also exported to foreign countries and British settlements in 1836, 411,697 tons, and in 1837, 471,150 tons, being an increase of 59,453 tons, and making the total quantity in 1836, 2,686,465 tons, and in 1837, 2,856,342, approaching in round numbers to nearly three millions of tons of coals per annum shipped from the river Tyne.

COBBETT, William, a celebrated political writer, who, in the course of his career, distinguished himself as a powerful advocate of the extreme principles, first of Toryism, and afterwards of Radicalism, was the son of a farmer and publican at Farnham, in Surrey, who occupied a house, still standing, beside the river Wey, which has been known for eighty years past as "The Jolly Farmer." It is believed that his grandfather also occupied the same house. As he never appeared to be certain of his own age, his sons procured an extract from the register of Farnham, by which it appeared that the four sons of his father, George, Thomas, William, and Anthony, were christened on the 1st of April, 1763; and as Anthony was the youngest son, and William was the third, it is inferred that he was born one year before he was christened. The eldest brother was a shopkeeper, the second, a farmer, and the youngest, a soldier in the East India Company's service, and afterwards celebrated for his pugilistic prowess. In his early life, William was occupied upon his father's farm, and in the intervals of his labour was taught the ordinary accomplishments of reading, writing, and arithmetic. "Towards the autumn of 1782, (he says) I went to visit a relation who lived in the neighbourhood of Portsmouth. From the top of Portsdown I, for the first time, beheld the sea; and no sooner did I behold it than I wished to be a sailor." The next day he went on board the Pegasus man-of-war; but both the captain and port-admiral, suspecting him to be a runaway, declined his services, and persuaded him to return home, where he remained till the following spring, when he took a more effectual flight.

It was on the 6th of May, 1783, that, being prepared to go to Guildford fair, he was suddenly tempted to mount a London coach, and arrived at Ludgate Hill, with about half-a-crown in his pocket. During the journey, he fortunately made acquaintance with a hop-merchant, who, he found, had dealt with his father. This gentleman kindly took him to his house; and, after having in vain endeavoured to persuade him to return home, procured him a situation as copying clerk to Mr Holland, of Gray's Inn, where he remained for nine months closely confined to the desk. This dull and incessant labour to a mind which must have ever been active and comprehensive, became at last irksome to him, and he quitted London for Chatham, where he enlisted. In doing so he proposed to join the Marines, still retaining his partiality for the sea; but by some misunderstanding he found himself entered into a regiment, the service companies of which were in Nova Scotia. During the year he remained at Chatham he improved his education in all its branches. He was soon raised to the rank of corporal; and at length sailed from Gravesend for Nova Scotia; where, however, he staid but a few weeks, the regiment being ordered to New Brunswick. Here his conduct appears to have been most exemplary; and he, no doubt justly, ascribes his farther promotion to the rank of sergeant-major, to his regularity, his early rising, and to the grand secret of husbanding time. In September, 1791, his regiment was relieved, and sent home. Shortly after his landing at Portsmouth, he obtained his discharge; receiving at the same time an honourable testimonial from his commanding officer. On obtaining his discharge from the army, Mr Cobbett brought charges of embezzlement against four officers of his

late regiment, and obtained a trial by court-martial; but on the day of trial no accuser appeared: every inquiry was set on foot for Cobbett, but he was missing. Such an investigation as could be made without the presence of an accuser was made; and the court judged, "that the said several charges against these officers respectively are and every part thereof is totally unfounded." Whatever might have been Mr Cobbett's motives for so extraordinary a proceeding, certain it is that in the month of March he arrived in France. In his autobiography he says,—"I went to France in March, 1792, and continued there till the beginning of September following, the six happiest months of my life. I met every where with civility, and even hospitality, in a degree that I had never been accustomed to. I did intend to stay in France till the spring of 1793, as well to perfect myself in the language, as to pass the winter at Paris. I had actually hired a coach to go thither, and was even on the way, when I heard at Abbeville that the king was dethroned, and his guards murdered. This intelligence made me turn off towards Havre-de-Grace, whence I embarked for America."

He landed at New York in October, 1792, and commenced his career as an author by an attack on Dr Priestley, who emigrated to America in 1794. The title of this attack was originally intended to be, "The Tartuffe detected; or, Observations on the Emigration of a Martyr to the Cause of Liberty," but on the remonstrance of the publisher, the first four words were omitted. The "Observations" formed the first of that celebrated series of papers to which Cobbett affixed the signature of *Peter Porcupine;* and which he afterwards continued under different heads, to an extent which enabled him to gather them into twelve volumes, in which form they were republished in England, in May, 1801. The publications which immediately followed the "Observations" were entitled, "A Bone to gnaw for the Democrats:" "A Kick for a Bite:" "A Bone to gnaw for the Democrats; second Part;" "Plain English addressed to the people of the United States:" "The New Year's Gift;" and "The Prospect from the Congress Gallery." Having quarrelled with his publisher, Mr Cobbett, in the spring of the year 1796, took a house in Second Street, Philadelphia, for the purpose of carrying on the bookselling business himself. The bold anti-republican sentiments which he had already avowed had rendered the name of Peter Porcupine sufficiently odious in America; and before he opened his shop, he himself states, "I put up in my windows, which were very large, all the portraits that I had in my possession of kings, queens, princes, and nobles. I had all the English ministry; several of the bishops and judges; the most famous admirals; and, in short, every picture that I thought likely to excite rage in the enemies of Great Britain." Here he continued writing boldly and virulently. His works were all attacks, and most of them were personalities; but their strong bias was always against democracy, and in favour of moral and political order. He now changed and divided according to whim the subject of the Porcupine papers, although he still retained the signature of Peter Porcupine, as his *nom de guerre*. The second series of pamphlets which he penned under this *sobriquet* he published weekly, with the title of the "Political Censor." He then dropped that, and brought out a daily paper, called "Porcupine's Gazette." The sale of "Porcupine's Gazette" was very considerable: at one time the number of subscribers amounted to between two and three thousand. Owing to an article which appeared in it relative to the king of Spain and his ambassador, a prosecution was commenced against Cobbett for a libel, in the supreme court of Pennsylvania. In 1797, he was again charged with libel, on which occasion he gave surety, himself and two others, in the sum of 4000 dollars, to keep the peace, and be of good behaviour. Having shortly after forfeited his recognisances, a civil process was issued for the recovery of the 4000 dollars, but the execution was suspended. A more overwhelming blow remained, and one which, in its ultimate effects, drove Cobbett from America. Dr Rush, a physician of Philadelphia, brought an action against him for slander. Finding that he had made Philadelphia too hot to hold him, Cobbett removed to New York. He was found guilty: damages, 5000 dollars. Two days after the trial he was arrested at New York for that sum; the whole amount of which was, however, paid by a subscription raised among English gentlemen. The "Rushlight" was the last work from Mr Cobbett's pen which appeared in America. On the 1st of June, 1800, he sailed from New York for England.

Mr Cobbett's writings had attracted the favourable notice of the Anti-jacobins in England, with some of whom he had been in correspondence; and on his arrival in England he started the "Porcupine," a daily paper, in which he warmly supported Mr Pitt. It had very indifferent success, however; chiefly, it is said, from mismanagement. Nor was Cobbett more successful in the bookselling business, which he also attempted in Pall Mall, under the sign of "The Bible and Crown." On the discontinuance of the Porcupine he commenced his "Weekly Register;" which for upwards of thirty years was the vehicle of his opinions and feelings. In the course of its long progress, the character of the work underwent great changes, as did its plan and arrangement. It originally comprised a report of the parliamentary debates; but that was dropped at the end of the fourth volume. One main object of the work was to collect all public papers, and other official documents, to whatever nation relating. This for some time was carefully adhered to; but latterly state-papers formed a very subordinate part of the Register. From the first, it was the power of the editor's pen which imparted to the Register its principal value, and gained for it its great popularity.

Cobbett commenced his career as a public writer in England under very favourable circumstances. He was an Ultra-tory, was powerfully patronised by the ministry, and enjoyed the confidence of some of the most eminent men of the day. Mr Windham declared in his place in the House of Commons that a statue of gold ought to be erected to him. His letters on the subject of the treaty of Amiens produced a great sensation both here and on the Continent. It has been said (we know not with what truth), that Mr Pitt refused to meet Mr Cobbett at Mr Windham's table, and that the resentment which he felt at that circumstance was the cause of the great change which subsequently took place in Mr Cobbett's political views. However that may be, it is certain that some articles which appeared in the Register during the year 1803 drew upon the editor the unwished-for attention of the Attorney-General. The alleged

libels were upon the Earl of Hardwicke, then holding the office of lord lieutenant of Ireland, and others. The trial came on before Lord Ellenborough and a special jury, on the 24th of May, 1804. The jury returned a verdict of guilty, and Cobbett was fined £500. Two days after, an action for damages instituted against Cobbett by Mr Plunket, solicitor general for Ireland (now Lord Plunket), was also tried at Westminster. The alleged libel in this case was part of the same article that formed the subject of the former trial; and a verdict was recorded with £500 damages. From this period a gradual change may be discerned in the tone of Cobbett's political disquisitions: from being a hearty church and king man, he became one of the foremost of radical reformers.

For some years Cobbett was a grievous thorn in the side of the ministry. At length, however, an opportunity appeared to have arrived for putting him to silence. His remarks in the Register of the 10th of July, 1809, on the flogging of some local militia-men at Ely, under the *surveillance* of a German regiment, drew upon him a government prosecution. The information was tried on the 15th of June, 1810, by a special jury, and Cobbett was found guilty. On the 9th of July he was brought up for judgment, and sentenced to be imprisoned for two years, to pay a fine of £1000 to the king, and at the expiration of the two years to give security for his good behaviour for seven years, himself in £3000, and two securities in £1000 each. The fine was paid by a subscription of his friends; but Cobbett suffered the whole term of imprisonment to which he had been sentenced, and this incarceration he never forgot or forgave. It increased the bitterness of his feelings against the party who had the means of inflicting it. On his liberation, his activity seemed to have received a fresh stimulus. He sought for every possible means of annoying those who sat at the helm of the state. He reduced the price of his "Register," and called into existence that "Twopenny Trash," the sale of which is said to have reached the unprecedented number of 100,000, but which ultimately led the government to procure the passing of the much talked of Six Acts. Mr Cobbett always asserted that these acts were passed for the express purpose of silencing him. He did not, however, wait for their operation, but in April, 1817, made a timely flight to America. There he remained till the latter end of the year 1819. During a part of his stay in that country he travelled with a view to the acquirement of agricultural information, and the result was the publication of the work which he entitled "A Year's Residence in America." Meanwhile he was otherwise industrious. He continued to annoy the ministry at home by the publication of his wide-spreading twopenny Register. This he composed in America, and regularly transmitted to England. In the year 1819, the act which had driven him into exile was repealed, and Mr Cobbett returned to his native land, bringing with him the bones of Tom Paine.

On his arrival in England, Mr Cobbett added to his existing embarrassments by commencing a daily newspaper—a fearful undertaking for a man without capital, and which ended as might have been expected. After a career of about two months, during the best part of the newspaper year, it was relinquished with considerable loss. He was subjected also to other inconveniences. Mr Cleary brought an action against him for libel; Mr Cobbett defended himself with his usual ability, and, although the damages were laid at £3000, the jury gave only 40s. In an action brought against him a week after by Mr John Wright, his late partner in the Register, &c., for three distinct libels, he was not so fortunate; Mr Wright obtained a verdict, with £1000 damages.

After his return to England, renewing his attention to agriculture, Cobbett took a farm at Barnes Elms, in Surrey, where he attempted to grow several plants and trees indigenous to America, and to introduce Indian corn as a staple article of English produce. To further his views, he published a Treatise on Cobbett's Corn; printed a number of his Register on paper made from the husks, and established depôts for the sale of its flour and bread. The project, however, failed: he resigned, after a few years, his farm at Barnes; and returned at last to the county from which he came, where he rented of Col. Woodroffe the farm of Normandy, consisting of not more than 120 acres, about seven miles from Farnham.

In 1820 he made an unsuccessful attempt to be returned member for the city of Coventry. In 1826 he made another attempt to enter parliament. The borough chosen for this experiment was Preston; but he was again unsuccessful. In 1825, he published "The History of the Protestant Reformation in England and Ireland." In this work he declares Luther, Calvin, and Beza to be the greatest ruffians that ever disgraced the world; and condemns their labours to contempt and derision. Of course, the Romish priesthood had the work translated into all the languages of the continent. In 1829 was printed his "Advice to Young Men and Women;" a book abounding in excellent maxims for conduct in life. About this period he delivered, at several places throughout the empire, a course of lectures on political economy. An account of his tour in Scotland, which country he embraced in his travels, was published in a separate volume.

In 1831, Mr Cobbett was, for the eighth time in his life, brought into a court of law on a charge of libel. On the 7th of July, in that year, he was indicted before lord Tenterden and a special jury, for "the publication in the 'Weekly Political Register' of a libel, with intent to raise discontent in the minds of the labourers in husbandry, and to excite them to acts of violence, and to destroy corn-stacks, machinery, and other property." Mr Cobbett defended himself in a speech which occupied six hours. The jury, after mature consideration, could not agree to a verdict; six being of one opinion, and six of another: they were consequently discharged.

On the dissolution of parliament, after the passing of the Reform Bill, in 1832, Mr Cobbett received an invitation to become a candidate to represent Manchester. This he accepted, but almost immediately afterwards was presented with a similar invitation from Oldham. This he accepted also; his reason being, to use his own words, because "the people knowing how difficult it would be to carry an election for Manchester by mere voluntary support, came to the resolution to secure my return for Oldham." At Manchester, he was at the bottom of the list; but at Oldham he was triumphant. Mr Cobbett was now in parliament. The attainment of a seat there had long been the object of his fondest ambition; and the master wish was at

length gratified. He devoted himself to his new duties with the energy by which through life he had been characterised; and, with the single exception of a tour to Ireland (undertaken for the purpose of seeing with his own eyes the state of things in a country which had afforded so fertile a field for political controversy), he suffered no other public engagement to occupy his mind. His parliamentary career, however, displayed little of the originality which was looked for from the author of the "Political Register," and was on the whole marked by a calmness and moderation hardly to be expected. His manner was colloquial and unaffected; and on several occasions he made considerable impression on the house. At the general election which followed Sir Robert Peel's accession to the helm of power, he was again returned to Oldham, and resumed his duties in the new parliament, but soon after he was seized with inflammation of the throat, of which he died in June 1835, aged, as it is calculated, seventy-three. He left four sons and three daughters. He had seven other children, who died young.

Some of Mr Cobbett's publications have been already mentioned. His other works (besides political pamphlets) were,—"The Emigrant's Guide," in ten letters; "Cobbett's Poor Man's Friend;" "Cottage Economy;" "Rural Rides;" "Village Sermons," "An English Grammar," in letters to his son; "A Grammar to teach Frenchmen the English Language;" "A Translation of Marten's Law of Nations;" "A Year's Residence in America;" "Parliamentary History of England to 1803," in twelve volumes; and "Debates from 1803 to 1810," in sixteen volumes, royal octavo. When to these are added "Porcupine's Works" in the United States, from 1793 to 1801, in twelve volumes, and the "Political Register" from 1802, a due estimate may be made of the extraordinary quantity of matter which he passed through the press.

COCA, a plant of South America, from six to eight feet high, somewhat like a blackthorn, which it resembles in its numerous small white blossoms, and the lively bright green of the leaves. These leaves, which are gathered and carefully dried, are an article of brisk trade, and the use of them is as old as the first knowledge of the history of Peru. It is a stimulant, which acts upon the nerves in the same manner as opium. Unhappily, the use of it has degenerated into a vice which seems incurable. The Indians of America, especially those of the Peruvian Andes, notwithstanding the civilization which surrounds them, have a vague sense of their own incurable deficiency, and hence they are eager to relieve themselves, by violent excitements, from such melancholy feelings. This accounts, not only for the use of the coca, but also for the boundless love of spirituous liquors, which possesses scarcely any other people in the world in an equal degree. To the Peruvian, the coca is the source of the highest gratification; for under its influence his usual melancholy leaves him, and his dull imagination presents him with images which he never enjoys in his usual state of mind. If it cannot entirely produce the terrible feeling of over-excitement that opium does, yet it reduces the person who uses it to a similar state, which is doubly dangerous, because, though less in degree, it is of far longer duration. This effect is not perceived until after continued observation; for a new comer is surprised indeed at the many disorders to which the men of many classes of the people are subject in Peru, but is very far from ascribing them to the coca. A look at a determined coquero gives the solution of the phenomenon; unfit for all the serious concerns of life, such a one is a slave to his passion, even more than the drunkard, and exposes himself to far greater dangers to gratify his propensity. As the magic power of the herb cannot be entirely felt, till the usual concerns of daily life, or the interruptions of social intercourse, cease to employ the mental powers, the genuine coquero retires into solitary darkness or the wilderness, as soon as his longing for this intoxication becomes irresistible. When night, which is doubly awful in the gloomy forest, covers the earth, he remains stretched out under the tree which he has chosen; without the protection of a fire near him, he listens with indifference to the growling of the ounce; and when, amid peals of thunder, the clouds pour down torrents of rain, or the fury of the hurricane uproots the oldest trees, he regards it not. In two days he generally returns, pale, trembling, his eyes sunk, a fearful picture of unnatural indulgence. He who has once been seized with this passion, and is placed in a situation that favours its development, is a lost man.

COCKERMOUTH; a borough and market-town in the county of Cumberland, situated twenty-six miles S.W. from Carlisle, at the mouth of the Cocker, which divides it into two halves immediately before its junction with the Darwent. A bridge of one arch unites the two divisions. The Darwent flows on the north of the town, and a bridge of two arches connects the hamlet of Goat, which lies on the north side of the Darwent, with Cockermouth. The trade of this place is considerable, particularly in cottons, linens, and woollen goods, for all of which there are extensive manufactories in the town or its immediate neighbourhood. It is also noted for its excellent tanworks, and its extensive manufacture of hats. This town has enjoyed the privilege of representation since the year 1640; and even by the Reform Bill, it still sends two members to parliament, although its population in 1841 was only 4941. Were population the rule of right in this matter, Glasgow, by the same ratio, would send a hundred members.

CODEINE, a vegetable alcali, discovered in opium by Robiquet. It is soluble in water, bitter, and narcotic; but loses much of its energy by combination with acids. Its salts, however, in large doses, produce excitement, followed by depression and general itching. Codeine has been employed on the continent as an anodyne with success; but it occurs in too small quantity ever to be extensively used. It is certainly one of the active principles of opium.

COINAGE (*a*.) The condition of the country in regard to the coined money in circulation during the early years of the present century was exceedingly unsatisfactory. Of silver coin issued from the Mint there was scarcely any. The shillings and sixpences that passed from hand to hand by common consent were almost all of them blank pieces of silver, intrinsically worth less than half the sums at which they were current. Guineas, half-guineas, and gold pieces of the value of seven shillings, were occasionally seen; but the rapid advance in the market-price of gold, at length effectually drove all coins of that metal from circulation. The place of guineas was supplied by bank notes, of the denominations of one and two pounds; and, to

provide the community with means for carrying on the smaller transactions of daily traffic, different expedients were successively adopted. At first, Spanish dollars stamped with a diminutive impress of the king's head were issued by government at the rate of 4s. 6d. each; but these soon disappeared, and the bank of England was authorised to issue "tokens" and put into circulation pieces of the respective nominal values of 1s. 6d., of 3s., and of 5s. The last of those tokens consisted of Spanish dollars, the original impress upon which was removed, and a different one given by means of a powerful press. The smaller tokens—those of 3s. and 1s. 6d.—were intrinsically so far below their nominal value, that they remained in circulation until called in; but the dollars, or five-shilling tokens, were so much nearer in value to their nominal rate, that, on a further advance in the market-price of silver bullion, it became necessary to raise their nominal value 10 per cent., causing them to pass for 5s. 6d. each.

*An account of the Value of Gold and Silver Moneys coined at the Mint in each Year from* 1801 *to* 1836.

| Years. | Gold. | Silver. | Total. |
|---|---|---|---|
| | £ | £ | £ |
| 1801 | 450,242 | 53 | 450,295 |
| 1802 | 437,018 | 62 | 437,080 |
| 1803 | 596,444 | 72 | 596,516 |
| 1804 | 718,397 | 77 | 718,474 |
| 1805 | 54,668 | 183 | 54,851 |
| 1806 | 405,105 | Nil. | 405,105 |
| 1807 | Nil. | 108 | 108 |
| 1808 | 371,744 | Nil. | 371,744 |
| 1809 | 298 946 | 115 | 299,061 |
| 1810 | 316,935 | 121 | 317,056 |
| 1811 | 312,263 | Nil. | 312,263 |
| 1812 | Nil. | 52 | 52 |
| 1813 | 519,722 | 90 | 519,812 |
| 1814 | Nil. | 161 | 161 |
| 1815 | ... | Nil. | Nil. |
| 1816 | ... | 1,805.251 | 1,805,251 |
| 1817 | 4,275,337 | 2,436,298 | 6,711,635 |
| 1818 | 2,862,373 | 576.279 | 3,438,652 |
| 1819 | 3,574 | 1,267.273 | 1,270,817 |
| 1820 | 949,516 | 847,717 | 1,797,233 |
| 1821 | 9,520,758 | 433,686 | 9,954,444 |
| 1822 | 5,356,787 | 31,430 | 5,388,217 |
| 1823 | 759,748 | 285,272 | 1,045,020 |
| 1824 | 4,065,075 | 282,070 | 4,347,145 |
| 1825 | 4,580,919 | 417,535 | 4,998,454 |
| 1826 | 5,896,461 | 608,606 | 6,505,067 |
| 1827 | 2,512,636 | 33,020 | 2,545,656 |
| 1828 | 1,008,559 | 16,288 | 1,024,847 |
| 1829 | 2,446,754 | 108,260 | 2,555,014 |
| 1830 | 2,387,881 | 151 | 2,388,032 |
| 1831 | 587,949 | 33,696 | 621,645 |
| 1832 | 3,730,757 | 145 | 3,730,902 |
| 1833 | 1,225,269 | 145 | 1,225,414 |
| 1834 | 66,949 | 432,775 | 499,724 |
| 1835 | 1,109,718 | 146,665 | 1,256,383 |
| 1836 | 1,787,782 | 497,719 | 2,285,501 |

With the exception of an insignificant amount of small coins, struck for the purpose of distribution, as alms by the crown, and known as Maunday money, from the circumstance of its being given away on Maunday Monday, there was not any silver coinage by the state in the present century until 1816.

Copper coin is issued from the Mint at the rate of £224 per ton, or more than 100 per cent. above its market value; there can hardly be expected, therefore, to arise any temptation for its conversion to any other purpose. The copper coinage which was issued in 1797, in place of the old defaced tower halfpence, was of the intrinsic value of £149 6s. 8d. per ton; but as the market value of the metal rose in 1806 to £200 per ton, it has since then been thought advisable to adopt the rate above mentioned. The value of copper coin issued from 1815 to 1836, has been as follows:—

| | £ | s. | d. |
|---|---|---|---|
| 1815 to 1820 | Nil. | | |
| 1821 | 2,800 | 0 | 0 |
| 1822 | 43,355 | 4 | 0 |
| 1823 | 32,480 | 0 | 0 |
| 1824 | Nil. | | |
| 1825 | 9,408 | 0 | 0 |
| 1826 | 50,400 | 0 | 0 |
| 1827 | 19,712 | 0 | 0 |
| 1828 | 2,464 | 0 | 0 |
| 1829 | 1,568 | 0 | 0 |
| 1830 | 2,464 | 0 | 0 |
| 1831 | 7,392 | 0 | 0 |
| 1832 | 448 | 0 | 0 |
| 1833 | Nil. | | |
| 1834 | 3,136 | 0 | 0 |
| 1835 | 2,688 | 0 | 0 |
| 1836 | 1,792 | 0 | 0 |
| | £180,107 | 4 | 0 |

Previous to the copper coinage above mentioned, as having been made in 1797, the country was inundated from one end to the other by coins put into circulation as halfpence, and which were struck by tradesmen or other private adventurers. The encouragement to this course was found in the existing state of the small coinage. The halfpence put into circulation by private parties were some of them creditable specimens of the art of coining; and all of them, although intrinsically below their nominal value, were yet considerably nearer to it than the halfpence otherwise circulating. When the state undertook, in 1797, to issue new copper coins, the circulation of these private tokens was prohibited.*

COLERIDGE, Samuel Taylor, an eminent poet, and distinguished philosophic *talker*, was the youngest son of the Rev. John Coleridge, vicar of St Mary Ottery, Devonshire, and Ann his wife, and was born in that parish, where he was baptized 30th December, 1772. His father died in the month of October, 1781, leaving his widow with a family of eleven children, of whom one, the Rev. George Coleridge, eventually succeeded him at Ottery St Mary. A presentation to Christ's Hospital, London, was procured for the subject of this memoir from John Way, Esq., one of the governors, and the boy was admitted to that most excellent school on the 18th of July, 1782. His father had formerly been a schoolmaster at South Molton, and is said to have assisted Dr Kennicott in the collation of manuscripts for his Hebrew Bible: he published dissertations arising from the 17th and 18th chapters of the Book of Judges, and other works. Samuel must have been well prepared for school by his father; for the age of nine years is rather a late period from which to start for the honours of Grecian and university exhibitionist at Christ's Hospital,—honours which he obtained in other nine years.

On the 7th of September, 1791, Mr Coleridge was sent from Christ's Hospital, with one of the exhibitions belonging to that foundation, to Jesus College, Cambridge. Here both his residence and his studies were desultory and unacademical. He remained at Cambridge till October term, 1794,† when he quitted the university without cause assigned, and without taking a degree. The master and fellows of the college consequently made an order that his name should be removed from the college boards, unless he returned before the 14th of June, 1795; and the committee of Christ's Hospital, considering that their exhibitions are voted

* Porter's "Progress of the Nation."

† It is said in 'The New Monthly Magazine' that in the autumn of 1793, he enlisted in despair into the 15th regiment of dragoons, from which his discharge was soon procured by his friends.

by the general court, under a restriction that if the students absent themselves from college without permission, their allowance is to cease, and having further considered that the general example of a scholar of such distinguished abilities might be detrimental to the youth of the house, resolved, that his exhibitions, which had been paid to April, 1795, should he from that time withheld.

It was in the long vacation of the year 1792 that he became acquainted with Mr Southey, then a student of Baliol College, Oxford; and the two young poets, both dazzled with the specious opening of the French revolution, commenced an enthusiastic friendship; and, in conjunction with others of the same way of thinking (or rather dreaming), struck out a scheme for settling themselves in the wilds of America, and for there having all things in common, which they called "establishing a genuine system of property." This vision they entitled *pantisocracy;* and it was with the eventual view of realizing it, that Mr Southey, in the year 1795, married a young lady of Bristol (his native place) of the name of Fricker, to whom he had been long attached, and that about the same time Mr Coleridge and a third poet and Utopian, Mr Robert Lovell, were respectively united to her two sisters. This project of emigration and pantisocracy, however, was never carried into execution. Mr Southey, on the very day after his secret marriage, obeyed his mother's uncle, by accompanying him to Lisbon for six months, travels of which the fruits were his pleasant letters from Spain and Portugal; and on his return quietly settled himself in Gray's Inn as a law-student. Mr Coleridge remained with his wife at or near Bristol.

In the previous winter of 1794—5 he had delivered there a course of lectures on the French revolution; having even before that published, in conjunction with Mr Southey, a hasty drama, called "The Fall of Robespierre." In the year 1795, appeared the "*Conciones ad Populum*, or Addresses to the People;" and in the year 1796 ten numbers of a weekly paper called "The Watchman."

It was at Nether Stowey, at the foot of the Quantock hills, in Somersetshire, in the summer and autumn of the year 1797, that Mr Coleridge wrote, at the desire of Mr Sheridan, the tragedy of "Remorse," which was, by his neglect, not brought upon the stage of Drury Lane theatre till the year 1813, when the property was under the direction of Mr Whitbread. During his residence at Stowey, he was in the habit of preaching every Sunday at the Unitarian chapel at Taunton, and was greatly respected by even the better class of his neighbours and hearers. Here, in June, 1797, his friends, Charles Lamb and his sister, visited him, and gave occasion to the sweet verses entitled, "This Lime-tree Bow'r my Prison;" and it was during his residence here that William Hazlitt became acquainted with him.

Mr Coleridge, in the years 1796 and 1797, published his first poetical volume, the second edition in conjunction with a few poems by his friends Charles Lamb and Charles Lloyd, just as Mr Southey had previously published his earliest poetical effusions bound up with those of his friend Mr Lovell. In 1796 was published separately the "Ode on the Departing Year," and in 1798 the "Fears in Solitude," "France, an Ode," and "Frost at Midnight." In the 1798 also appeared the first edition of the celebrated "Lyrical Ballads" of Mr Wordsworth and Mr Coleridge.

In the autumn of the year 1798, Coleridge, to whom his friends, Messrs Josiah and Thomas Wedgewood of Etruria, in Staffordshire, had generously granted an annuity of £100, (Mr Hazlitt says £150,) commenced his travels in Germany, accompanied by Mr Wordsworth. Of these travels the only records are contained in a few letters in "The Friend" (repeated in the "Biographia Literaria"); but the fruits of his German studies of men and books are apparent in every after-production of his mind and pen.

On his return from Germany, in the year 1800, he went to reside at Keswick, where his friend Mr Southey had, after filling for some time the situation of secretary to Mr Corry, the Irish chancellor of the exchequer, finally settled, Mr Wordsworth then living at Grasmere; and here his religious tenets, to use his own expression, found a final reconversion to the whole truth in Christ. He tells us, indeed, that even before this, while meditating, his heart had long been with the blessed Paul and the beloved John, though his head was with Spinoza. He now became convinced, both head and heart, of the doctrine of the divine trinity in unity.

In the year 1800 were published Coleridge's translation of Schiller's "Wallenstein," both the first and the second parts, and then "the harp of Quantock" was nearly silent for ever. In the year 1804 he made a voyage to Malta, on a visit to his friend Dr Stoddart, then king's advocate there. Sir Alexander Ball was then governor of that island, and was so greatly pleased with his genius and conversation, that during an occasional absence of the secretary to the government, he appointed Mr Coleridge to act in that office. We need not say that his talents lay in any other direction than that of office business; but he flattered himself that his mind could bend to the yoke, and the salary was £800 per annum. Notwithstanding the eulogium that he has written upon Sir Alexander in "The Friend," there was little congeniality of mind between the governor and his secretary. They did not agree, and the employment lasted in name and salary for about nine months only. Coleridge was altogether in Malta from May, 1804, to October, 1805. In his way home he passed through Calabria and Italy; and it is to be regretted that so few of his feelings on his visit to Rome are to be found recorded in his writings. In the years 1809-10, he issued from Grasmere a weekly essay, stamped to be sent by the general post, called "the Friend." This paper lasted for twenty-seven numbers, and was then abruptly discontinued; but the papers have since been collected and enlarged in three small volumes. In the year 1812, Coleridge, being in London, edited, and contributed several very interesting articles to, Mr Southey's "Omniana," in two small volumes. In 1813, the tragedy of "The Remorse" was acted and printed. In the year 1816, he published "The Statesman's Manual; or, the Bible the best Guide to political Skill and Foresight; a lay Sermon;" and in the following year, "A Second Lay Sermon, addressed to the higher and Middle Classes, on the existing Distresses and Discontents." In this year also appeared the Biographical Sketches of his Literary Life and Opinions, and his newspaper Poems re-collected under the title of "Sibylline Leaves." In the year 1816 likewise was published by Mr Murray, at the recommendation of Lord Byron,

who had generously befriended the brother (or rather the father) poet, the wondrous ballad tale of "Christabel." In 1818, was published the drama of "Zapolya." In 1825, "Aids to Reflection, in the formation of a manly Character, on the several grounds of Prudence, Morality, and Religion; illustrated by select Passages from our elder Divines, especially from Archbishop Leighton." This is a very precious manual. And—to conclude the catalogue of his works—in 1830 he published a small volume "On the Constitution of the Church and State, according to the Idea of each, with Aids toward a right Judgment on the late Catholic Bill." In the year 1828, the whole of his poetical works, including the dramas of Wallenstein (which had been long out of print), Remorse, and Zapolya, were collected in three elegant volumes by Mr Pickering.

The latter years of Coleridge's life were made easy by a domestication with his friend Mr Gillman, the surgeon of Highgate Grove, and for some years the poet deservedly received an annuity from George IV. of £100 per annum, as an academician of the royal society of literature. Coleridge contributed one or two erudite papers to the transactions of this society. In the summer of 1828, he made the tour of Holland, Flanders, and up the Rhine as far as Bergen. For some years before his death he was afflicted with great bodily pain; and was on one occasion heard to say, that for thirteen months he had from this cause walked up and down his chamber seventeen hours each day. He died on the 25th of July, 1834, having previously written the following epitaph for himself:—

"Stop, Christian passer-by! Stop, child of God!
And read with gentle breast. Beneath this sod
A poet lies, or that which once seem'd he—
Oh, lift a thought in prayer for S. T. C.!
That he, who, many a year, with toil of breath,
Found death in life, may here find life in death!
Mercy for praise—to be forgiven for fame,
He asked and hoped through Christ. Do thou the same."

He was buried in Highgate church. He left three children, namely, Hartley, Derwent, and Sara. The first has published a volume of poems, of which it is enough to say that they are worthy of Mr Wordsworth's verses addressed to him at "six years old." The second son is in holy orders, and is married and settled in the west of England; and the poet's daughter is united to her learned and lively cousin, Mr Henry Nelson Coleridge, the author of "Six Months in the West Indies." This young lady had the good fortune to be educated in the noble library on the banks of the Cumberland Greta, where she assisted her accomplished uncle in translating from the old French the history of the chevalier Bayard, and from the Latin the account of the Abipones, or Equestrian Indians of South America, by the Jesuit Martin Dobrizhoffer; both of which works were published by Mr Murray.

COLLETTA, Peter, a Neapolitan general and historian, was born at Naples in 1775. He early applied himself to the study of mathematics, while his classical education was not neglected. In 1796 he entered the military service as an officer in the artillery, and was present during the disastrous campaign against the French in 1798. He served afterwards under the turbulent and short-lived republic, without being either a demagogue or a fanatic. His friends succeeded in saving him from the proscriptions that followed. Being, however, dismissed from the service, he found employment as a civil engineer in draining the marshes near the mouth of the Ofanto. When the French took possession of Naples, for the second time, in 1806, Colletta was reinstated in his rank, and employed at the siege of Gæta, and at the taking of Capri. He was afterwards sent by Murat, as Intendant, to Calabria, where he remained two years. In 1812, he was made a general, and director of the roads and bridges. Two of the finest roads in the neighbourhood of Naples were planned by him, and executed under his directions. In 1813, he was appointed chief of the engineer department. He accompanied Murat in his two campaigns of 1814-15, and after the reverses of the last, he was sent by him to the Austrian head-quarters, where he signed the capitulation of Cassalanza, by which Ferdinand was restored to the kingdom of Naples. He was continued in his employments by the restored government, which he served with loyalty. He kept entirely aloof from the plots and machinations that brought about the revolution of 1820. During the short period of the constitutional government he was sent as captain-general to Sicily, to restore order in that island, and was subsequently appointed minister of war: but the entrance of the Austrians, and the overthrow of the constitution, again and finally threw him out of employment, and drove him into exile along with many others, on account of their liberal opinions. After spending two years in the Austrian dominions, where he was treated with respect and attention by that government, he was allowed, on account of his health, to return to Italy in 1823. He took up his residence in Tuscany, and beguiled the tedium of exile, in his latter years by composing a history of the kingdom of Naples, which forms a most valuable addition to the stock of Italian histories, and may be considered as a worthy continuation of Giannone's history of Naples. It embraces the period from the establishment of the Spanish Bourbon dynasty on the throne of Naples, in 1734, to the death of Ferdinand I., in 1825. Colletta died in November, 1831.

COLMAN, George, "the younger," an English dramatic writer, and in his old days "licenser of plays," in which latter profession he was as remarkable for the severity of his decorum as his own writings were for their laxness, was the son of George Colman, the author of the Jealous Wife, and the translator of Terence, (for whom see body of work,) and was born in London, 21st Oct. 1762. After having passed through Westminster school, he was sent to Oxford, and afterwards to King's college, Aberdeen. At Aberdeen, young Colman published a little poem, entitled "The Man of the People," the hero of which was Charles Fox. He then finished a musical farce, in two acts, which he called "The Female Dramatist," and transmitted it to his father. This was brought out, at the Haymarket, anonymously, on the benefit-night of Jewell, the treasurer; but it was condemned. Undismayed by this failure, he proceeded to the composition of a three-act comedy. This was entitled "Two to One," and was the first of his publicly avowed dramas. It was sent to town early in 1783, was immediately accepted by his father, but was not performed until the season of 1784. Its success was very flattering, and it had a run. He returned to London in Jan. 1784. In August of the same year he went to Paris, in consequence of an odd commutation of his father's design to

send him into Switzerland for a year or two. In Paris he remained six weeks, and then returned to commence the study of the law. He entered at Lincoln's Inn; but the drama had laid too fast hold of him to forego its fascinations; and he devoted to Shakspeare, and our early dramatic poets, the time and attention which he ought to have bestowed upon "Blackstone's Commentaries," or "Coke upon Littleton." Totally, therefore, eschewing the law and its dry details, he betook himself to dramatic writing, and availing himself of the facilities which the theatre afforded, mixed in the gay world to an excess that subsequently, we believe, cost him many years to recover from. In the latter part of the year 1784, he eloped with Miss Catharine Morris, and was married to her at Gretna Green. This affair was managed unknown to his father. At a subsequent period, the marriage was acknowledged; and the ceremony was repeated in Chelsea church. Many years afterwards, on the death of Mrs Colman, from whom he had been long separated, he married Mrs Gibbs, the celebrated actress.

Mr Colman was the author of many dramas, of every kind and grade, save and except, perhaps, tragedy; though he took flights in that way, but engrafted upon the stock, as Shakspeare has done, comic parts in prose; the loftier personages assuming the more dignified tone of blank verse. Of these "plays," as they were denominated, "The Iron Chest" is a memorable instance. On its first representation it was condemned; but after curtailment, it met with better success, and still continues upon the stock list of the acting drama. In consequence of the condemnation of this play, he ever afterwards added, "the younger" to his name; in order that the reputation of his father might not by possibility suffer by being confounded with his own. "Turk and no Turk," his second dramatic essay, proved to be a failure; whilst "Inkle and Yarico," became most extensively popular. These were followed by "Ways and Means," "Poor Old Haymarket," "The Mountaineers," "New Hay at the Old Market" (since cut down to "Sylvester Daggerwood,") "Blue Beard," "Feudal Times," "Poor Gentleman," "John Bull," "Who wants a Guinea?" "We fly by Night," "The Battle of Hexham," "Surrender of Calais," "Heir at Law," "Blue Devils," "Review," "Gay Deceivers," "The Africans," "Love laughs at Locksmiths," "X. Y. Z.," "Actors of all Work," with innumerable interludes, prologues, epilogues, &c., in which he was particularly smart and happy.

It is no easy task to criticise the merits of Mr Colman's comedies. They are satires on the past age, written at a time when there was more character in the gentry of our nation than we now meet with, and less effort made to disguise or smother personal peculiarities and external follies. The wit made the most of these; and the production of a new comedy was an important and delightful event to the town. The life and bustle of our author's writings will ever please, though the jokes were better applicable to the days of their birth; the frequent passages of sentimental morality and double-barrelled loyalty, which are now regarded as clap-traps, at the time they were written electrified the audience, and helped to keep the country from civil discord, and in satisfaction with itself.

Mr Colman was also the author of three poems, distinguished more by wit than by decorum, published under the title of "My Nightgown and Slippers," which he added to and republished under the title of "Broad Grins;" as also a volume of doggrel, called "Poetical Vagaries:" another, entitled "Vagaries Vindicated:" another, called "Eccentricities for Edinburgh;" and lastly, we believe, his "Random Records," in two volumes; being memoirs of his early life and times. Some of his farces were introduced to the public under the assumed name of Arthur Griffinhoof, of Turnham Green.

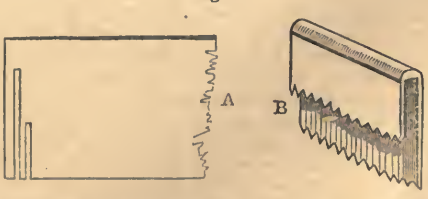
Mr Colman was in a high degree social, convivial, and intelligent; and his company was sought by men of all parties and all ranks, not excepting royal. Lord Byron speaks of his wit and repartee as being of the highest order. He died on Wednesday, the 26th of October, 1836, at his residence in Brompton Square; aged seventy-four years. His remains were deposited, on the 3d of November, in the family vault at Kensington church, where likewise rest the ashes of his grandfather, Francis Colman, and his father, George Colman.

COLTON, Charles Caleb, the author of "Lacon," a work abounding in many profound apothegms regarding human life, was graduated A.B. at King's College, Cambridge, in 1801; was afterwards chosen a fellow; took orders, and in 1818 obtained the vicarage of Kew and Petersham. He was noted for his eccentricities, irregularities, and inveterate attachment to gaming, which reduced him to beggary; and his excesses brought on a disease which required a surgical operation, to avoid which he shot himself, at Fontainebleau, in France, April 28, 1832. He is chiefly known as the author of "Lacon, or, many Things in few Words, addressed to those that think," which has gone through several editions, the first of which appeared in 1820.

COMB, (*a.*) Combs are generally made from horn or tortoise-shell, bone or ivory. Bullocks' horns, after the tips are sawed off, are roasted in the flame of a wood fire, till they are sufficiently softened. They are then slit up, pressed in a machine between two iron plates, and plunged into a trough of cold water by which they are hardened. A paste of quick lime, litharge, and water is used to stain the horn to resemble tortoise-shell. Tortoise-shell is steeped in boiling water to soften it, and then pressed between brass or iron moulds to receive the proper shape. After the horn or shell, bone or ivory, has received its outline shape and curvature, by files or fine rasps, the place of the teeth is marked with a triangular file, and then the teeth themselves are cut out with a double saw, composed of two thin slips of tempered steel, notched with very fine sharp teeth. These slips are mounted in a wooden or iron stock or handle, in which they may be placed at different distances to suit the width of the comb teeth.

Let A, fig. 1, represent the piece of horn or

Fig. 1.



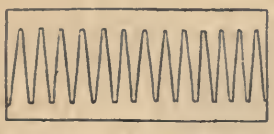

wood, out of which the comb is to be cut; it is of the exact size of the comb. B is the saw with its

two unequal blades; the first cut of this saw has already made two nicks in the material, that by the longer blade to the full depth of the tooth, and that by the shorter to half the depth; the longer blade is now placed in the shallow nick, which it deepens to its full extent, while a third nick is made by the shorter blade: in this manner the whole of the teeth were gradually marked out, and were afterwards finished by means of files.

A much better mode of making combs is to fix upon a shaft or arbour in a lathe a series of circular saws, with intervening brass washers or discs to keep them at suitable distances; to set in a frame like a vice, in front of these saws, the piece of ivory or horn to be cut; and to press it forward upon the saws at an angle of forty-five degrees, by means of a regulated screw motion. When the teeth are thus cut, they are smoothed and polished with files, pumice stone and tripoli.

The manner in which combs are cut at present is an apt illustration of the advantage derived to manufactures and the arts by the invention of ingenious men, directed frequently by accident. About twenty years ago, the principal house in London for the sale of combs had received from abroad some patterns of ornaments, like the spikes and balls of coronets, to be attached to tortoise-shell combs. They gave the order to execute these to an ingenious artist of the name of Ricketts, who contrived a punch, by the successive pressure of which, on a thin piece of warm tortoise-shell, he cut out the pattern piece by piece; on disengaging the pattern from the other part, he observed to himself, "Here are two combs cut out of the material for only one." He improved on this hint, and constructed a machine in which he employed a cutter like a chisel, which, descending upon the shell, cut one side of a tooth at a time, and then by shifting the bed on which the shell was laid and moving it forward a short distance, the other of the tooth was cut: the result of this operation may be

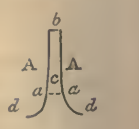
Fig. 2.



seen in fig. 2, which represents a piece of shell very little larger than necessary for one comb, but which, by this means, is made to produce two.

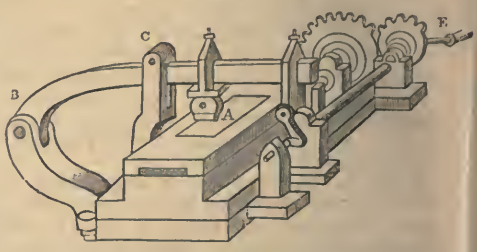
Various contrivances have been adopted to guide the direction of the cutter, so as to cause it to descend obliquely and at regular intervals; but this oblique action was next avoided by the employment of two cutters, or chisels, placed at an angle with each other, by means of which a perfect tooth is cut at one blow. The scales of tortoise-shell being much thinner on one edge than the other, were not so well adapted for this invention as horn, the thin edge not being thick enough for the back of the comb: but this can be remedied by soldering another piece of shell upon the thin edge; it is effected in this manner. The two surfaces to be united are nicely rasped and smoothed, placed between two thin boards, and submitted to the action of a screw-press. The press is put for some hours in boiling water and tightened from time to time, until at length a complete junction takes place.

Fig. 3.




The cutters are seen at A A, fig. 3; they are arranged in this manner:—*a a* are the edges of the chisels set at an angle by *c*, which is called the *filling-up piece: b* is a smaller chisel which cuts away the point of the tooth from the shell, to which it would otherwise be attached; but this small chisel only effects this operation on one of the combs: the opposite teeth are cut away by the bent ends *d d* of the longer chisels, which at each blow half separate two teeth.

Fig. 4.




The shell is firmly fixed beneath the cutter A, and the engine acts in the following manner: B is a strong bar firmly jointed behind to the framework; it is kept steady by the loop C, and is moved downwards by means of the crank in front, carrying along with it its cutters upon the shell. This crank is moved by the handle and winch E; and is so fixed that it brings down the cutter upon the shell at that part of the revolution of the winch, when the wheel with a few teeth which is fitted to its axis, is clear of the teeth of the larger wheel. As soon as the tooth is cut, the crank in its revolution raises the lever and cutter, and the teeth on the small wheel entering those of the larger, move the large wheel a part of a revolution. This large wheel is fixed to a screw which is attached to a sliding table, on which the tortoise-shell is placed; the screw is consequently turned a part of a revolution, and the shell and table thrust forward proportionately. The smaller wheel becomes again disengaged from the larger, the crank again brings down the cutter on the shell, and another tooth is cut, and this alternate action takes place until the two combs are cut out. Another piece of shell is supplied, and the movement of the handle of the winch being reversed, the shell and the table move back to their former position, and two more combs are separated. If combs with finer teeth are required, the large wheel is changed for another with more teeth on its circumference, and the cutters are also set at an acuter angle.

COMBATS, Judicial (*a.*) The custom of judicial combats, of which traces were discoverable in our laws until the beginning of the reign of George IV., was introduced into civilized Europe by the barbarous tribes of Germany who overwhelmed the Roman empire. It appears to have been first legally established by Gondebald, king of the Franks, by an edict published at Lyons, March 29, A.D. 501, in which the monarch assigns his reasons for establishing, or rather sanctioning the institution: "Let causes be decided by wager of battle, to the end that rash oaths should no longer be taken respecting obscure facts, nor false oaths respecting certainties."

The rules of judicial combat are detailed at great length in the ordinances of various kings during the middle ages, but the following summary will be found amply sufficient for general readers When a plaintive claimed a possession which the defendant refused to resign, or charged him with a crime which he denied, a challenge was the immediate result. Whichever of them appealed to the combat threw down before his adversary some pledge, usually a glove, which was called the gage of battle, and taking this up was the signal that the challenge was accepted. In later ages it was necessary to have the permission of the king or liege lord before a challenge could be given, but at first, the Suzerain had no right to interfere until called to preside at the combat or to name a president, and his power was limited to naming the place and time for the contest. When the challenge was accepted, each combatant named certain witnesses, called sponsors, or godfathers, "because," says an old historian, "they were about to attend a baptism of blood," and these called the champions their god-children! These sponsors, or seconds, as they were subsequently called, were originally appointed to watch the combat, and see that its rules were fairly observed; but they soon began to join in the fight themselves, either to aid or to avenge their principals. Application was next made to the Suzerain to appoint the umpire or president, and the time and place of the combat. A space called the "close-field" was marked out, and surrounded by ropes or palings. At the upper part of this little amphitheatre a gallows or a pile of wood was erected, that the vanquished, if he escaped with life, might be instantly hanged or burned. In front of this were two seats covered with black, for the two combatants. Before entering the lists the combatants attended mass, and received the eucharist in the form prescribed for its administration to persons at the point of death; and so common were such events, that a special service was prepared for the occasion, called "the duellist mass," (*missa pro duello,*) which may be found in most ancient missals. When the service was concluded, the combatants were led by their god-fathers, accompanied by the heralds and clergy, to their seats in the lists, and a discourse was pronounced, usually by a priest, exhorting them not to tempt Providence if conscious of falsehood or injustice. An oath was administered to each, in which they called to witness, God, the virgin Mary, the saints, and especially "that good knight and gentleman St George," that their causes were just, and that they would not depart from them. They next swore on the Gospels that they had used no sorcery, witchcraft, or magical incantations, and that they had not about them any spell, amulet, or charm. But not satisfied with the oath, the president, called usually "the marshal of the field," caused the combatants to be searched, and at the same time had their arms measured, so that neither should have an unfair advantage by length of weapon. The marshal of the field, attended by the sponsors, then divided as fairly as he could the advantages of ground, sun, and wind, sometimes adding comfitures and other little sweets to serve as refreshments in the battle. The lists were then cleared, and the spectators prohibited from entering them under pain of death; severe penalties were also denounced against any person who should distract or interrupt the combatants by coughing, sneezing, speaking, or making any sound whatever. When these preliminaries were arranged, the marshal gave the signal for combat by dropping his truncheon, and saying to the sponsors, "Let the brave champions go." In the earlier ages every combat was a duel "to the utterance," that is, until one or other of the champions was so disabled as to be unfit for continuing the fight. Defeat was condemnation, and when the subject of charge was a capital crime, the vanquished passed at once from the lists to the gibbet.

Judicial combat in France was carried to a greater extent than in any other European country. Not only could a challenge be maintained between the principals of a suit, but either of the parties might challenge one of his adversary's witnesses, or even the judge by whom the cause was tried, if dissatisfied with his decision. Ladies or ecclesiastics fought by proxy; if their champion was overthrown he was condemned to lose his right hand, and this penalty was rigidly enforced, in order that champions should fight as strenuously in the cause of others as they would in their own.

In the reign of William the Conqueror judicial combats appear to have been very common in England, for one of his laws forbids clergymen to fight duels without the previous permission of their bishop. But the feelings of the British people were averse to this barbarism, and, from the eleventh century, courts of law possessed more authority in England than in any other country.

COMETS, (*a.*) The accounts of comets that have come down to us from earlier times, although somewhat numerous, and in many cases relating to extraordinary celestial objects, are nevertheless so vague, and in all probability so exaggerated, as to be of little value. While the opinion prevailed, that comets were temporary fires lighted up in our own atmosphere, that is, of the same nature with those transient meteors that attract a momentary gaze and disappear, no exact observations were made, and no pains seem to have been taken to verify an hypothesis so hastily and generally received. It appears not a little strange to us of the present day, that it did not occur to men so acute and sagacious as Aristotle and others, who evidently had paid some attention to this subject, that meteors, and all atmospherical objects are to be seen only over a small extent of the earth's surface, and that they are seen in opposite directions from places not very remote from each other. Now it is very well known that when a comet presents itself, it is not only seen over an extent of thousands of miles, but it seems to occupy throughout this region the same place in the heavens. It appears in the same constellation, and near the same star. The path of Halley's comet, for instance, traced among the stars, was essentially the same to European and American observers. It is hence manifest, without having recourse to any exact observations, that comets cannot be very near the earth, as the ancient astronomers supposed; that they must be far removed out of our atmosphere even to the region of the planets. This important circumstance was first fully ascertained by Tycho Brahe; and being well established, it was sufficient of itself to overthrow the ancient doctrine on this subject. One reason, no doubt, why this crude opinion prevailed so long, was the belief in the existence of solid crystal orbs supporting the planets, and wheeling one within the other. The idea of large bodies,

like what we now understand the comets to be, intersecting and traversing those solid spheres of crystal, was wholly inadmissible and irreconcilable with the received notions, touching the heavenly bodies; a striking example of the tendency of error to propagate itself.

Comets being thus recognised as very distant bodies like the planets, the next inquiry was to ascertain the paths they described, and the laws which govern their motions. The keen and penetrating eye of Newton was now directed to this subject, and comets at once assumed the dignity of planets, revolving round the same central body, describing the same kind of curves, preserved in their places by the same forces, subjected to the same laws, and differing only, or principally in this: that their orbits are more oval, or more elongated, and lie in all manner of directions. This bold position was put to the test, in the case of the remarkable comet of 1680, which presented itself at this critical juncture, as if to vindicate this class of bodies of which it was so splendid a representative. The genius of Newton triumphed in this as in all his great enterprises; and comets now began to be regarded as an important part of the solar system. To put this rational and sublime theory beyond all question, and to convince the world of its truth, it was only necessary to identify a comet as one which had before appeared, or, in other words, to foretell the return of one of these bodies, and delineate beforehand its path through the heavens. This nice and difficult task was undertaken and accomplished by Halley. By comparing a comet which appeared in 1682, and which he saw himself, with one which was observed in 1607, they seemed to describe one and the same orbit.* It was not to be supposed that two comets would follow each other in identically the same path round the sun. It was fairly presumed, therefore, that these were not two separate comets, but different appearances of one and the same comet; and that the interval between 1607 and 1682, or about seventy-five years, was the time employed to complete a revolution. This conclusion was rendered still more probable by going back about seventy-five years further, namely, to 1531, when we find a comet described, that, from the observations that have come down to us, evidently pursued the same track through the heavens, which was described by that of 1607, and that of 1602. If any doubt remained of the identity of these comets, it must certainly be removed, when we are told further, that at another interval of the same length, that is to say, in the year 1456, there is a record of a comet whose path seemed evidently to correspond with those already referred to.

With such evidence before him, Halley ventured to infer that the comet of 1682 revolved round the sun in about seventy-five or seventy-six years, and that consequently it might be expected to appear again, after the lapse of another such period. He accordingly had the courage and the good fortune to predict that this same comet would return towards the close of the year 1758, or the beginning of 1759. The time of a revolution seemed to be liable to considerable variation, which might be attributed, with great probability, to the attraction of the planets. To fix the time of the predicted return, as precisely as the nature of the case would admit, Clairaut undertook to calculate the effect which the larger planets, Jupiter and Saturn, would have, in accelerating or retarding the motion of the comet, the result of which was, that the return of the comet to its perihelion, would be delayed by these two planets, about one year and eight months. The time fixed by Clairaut for the comet's reaching its point of nearest approach to the sun, was the 4th of April. He observed, at the same time, that he might err a month, by neglecting small quantities in the calculation. The comet was first seen near Dresden, by a peasant, on the 25th of December, 1758, thus verifying the prediction of Halley; and it passed its point of nearest approach to the sun, the 13th of March 1759, within twenty-three days of the time fixed by Clairaut, for the perihelion passage, and accordingly falling within the assigned limits.

It again appeared in the autumn of 1835, forming a period of about seventy-six years from the preceding appearances. There is reason to believe that an appearance of this comet can be traced back as far as 130 years B.C.; and that it is the same comet that was seen in the years 323 and 399, when it was decribed as being of vast magnitude and horrible aspect. This is also supposed to be the comet which appeared in 550, 855, 930, and 1006; in which latter appearance, its nucleus is reported to have been four times as large as the planet Venus. It was seen in 1230, 1305, and 1380, and again in 1456: at this last visit it was accompanied by a tail, which extended over sixty degrees of the heavens, and gave rise to so much terror and consternation, that Pope Calixtus ordered prayers to be offered up from all parts of Christendom, for the removal of the comet and its malign influences. The Turks were engaged at this time in a successful war against Greece; and when Europe was fearing nothing less than subjugation at the hands of the victorious Turks, this comet, having a tail in the form of a Turkish sabre, was regarded by the tribes of the West as the emblem of divine vengeance. After this, its appearances and progress are regularly recorded to the present times. In the sixteenth century it is said to have displayed a fine gold colour. Halley, in 1682, describes it as being as large and bright as Jupiter, with a tail of 30°. The inclination of its orbit to the ecliptic is about $7\frac{1}{2}$°. In 1835, the length of its tail to the naked eye was about 6°; with a telescope it appeared larger.

The fulfilment of Halley's memorable prediction, placed the theory of comets upon a sure basis. It has not only confirmed those who had entered into all the *a priori* reasoning upon the subject, but it was of a nature to carry conviction to the unlearned and the sceptical, to convert the mass of mankind, and make them firm believers, not only in the doctrine respecting comets, but in the whole science of modern astronomy. A comet is no

* An orbit is recognised to be the same with a former one, when it has in all respects the same position in the heavens, that is, when there is an agreement in the following particulars. 1. The *perihelion distance*, or distance of the point of nearest approach to the sun. 2. The position of this point or *longitude of the perihelion*. 3. The *inclination* of the plane of the orbit to the plane of the ecliptic. 4. The position of the intersection of these planes, or the *longitude of the node*. 5. The *direction* of the motion, whether from west to east like the planets or the reverse. The comet of 1682, for instance, had its orbit determined as follows:

| Perihelion distance | Longitude of the perihelion | Inclination | Longitude of the node | Direction. |
|---|---|---|---|---|
| 0. 58 Sun's distance from the earth, being 1. | 301° 56′ | 17° 42′ | 50° 45′ | Retrograde. |

The following are the corresponding particulars for the comet of 1607.

| | | | | |
|---|---|---|---|---|
| 0.58 | 302° 16′ | 170° 2′ | 50° 21′ | Retrograde. |

longer a meteor, a transient fire in our atmosphere. It is no longer a messenger of evil. It is no longer to be dreaded as a mysterious and unwelcome intruder among the celestial luminaries. It is to be ranked among the great works of nature. It is not only a curious object to behold, but it affords an interesting subject of contemplation. We delight to trace it through its long journey of three-fourths of a century; and when the eye can no longer distinguish it, to follow it in imagination, as it pursues its upward flight, leaving planet after planet far behind, penetrating the unexplored depths of space, with an almost inexhaustible force, and not ceasing its ascent, till it has doubled the distance of the most remote of the planetary bodies.

Other comets are at length found, as might be expected, to possess the character of revolving bodies. A comet appeared in 1818, which was recognized as one which had been observed several times before. Its orbit was of so small an extent, compared with that of most comets, as to admit of its period, or time of a complete revolution, being computed. This was ascertained by Encke, to be about three years and a third, and its return was predicted to take place in June 1822. Astronomers were apprized at the same time, that its situation in the heavens, would be such as to render it invisible in Europe and America; but that it would be seen by the inhabitants of New South Wales. It actually returned according to the prediction; and after sufficient time had elapsed for intelligence to arrive from that quarter of the globe we were greeted with a regular set of observations, made by Mr Rumker, an experienced astronomer, at Paramata, completely justifying the anticipations of the sagacious Encke. This name has therefore already become familiar to us, like that of Halley, as a convenient means of designating a comet, with which we are continually becoming more and more acquainted, and through it, with the whole class to which it belongs. As it completes a revolution in about three years and a third, it has returned several times since 1822, namely, in 1825, 1828, 1832, 1835 and 1838. These frequent returns have been applied to a valuable purpose. They have served to teach us that the celestial spaces are in all probability not absolutely void, as we have been accustomed to regard them. There is the strongest reason for believing that this comet is resisted by an ether or some extremely rare medium. At each successive return, the evidence has accumulated, till at last the position assumed seems scarcely to admit of a doubt. The effect of the supposed medium has been, by checking the motion of the comet, in the direction of a tangent to its orbit, to cause the attraction toward the sun to predominate, whereby the path described is continually contracted into a sort of spiral, the time of a revolution at the same time being continually diminished. The amount of this diminution is found to be about two days each revolution, after making allowance, with all possible precision, for the disturbing influence of the planets. No other effect has been observed to take place, after the most careful scrutiny, except that which would necessarily arise from the alleged cause.

Another comet is now supposed to afford additional evidence on this all important point, which gives an extraordinary interest to each successive return of those comets whose periods are known. "It cannot be doubted," says Sir John Herschel, "that many more will be discovered, and by their resistance, questions will come to be decided, such as the following: What is the law of density of the resisting medium which surrounds the sun? Is it at rest or in motion? If the latter, in what direction does it move? Circularly round the sun, or traversing space. If circularly, in what plane? It is obvious that a circular or vorticose motion of the ether would *accelerate some comets and retard others*, according as their revolution was, relative to such motion, direct or retrograde. Supposing the neighbourhood of the sun to be filled with a material fluid, it is not conceivable that the circulation of the planets in it for ages, should not have impressed upon it some degree of rotation, in their own direction, and thus may preserve them from the extreme effects of accumulated resistance."

Another comet, known as Biela's, appeared in 1826. It is recognised as being the same which was observed in 1805 and in 1772. It was found to have a period of six years and three quarters. Its return was accordingly predicted to take place in October, 1832; and it actually made its appearance at the time and place assigned. It is remarkable for its near approach, not to the earth itself, but to the earth's orbit, the least distance being less than the sum of the semidiameters of the comet and the earth, so that if the earth had happened to be in that point, at the same time with the comet, it would certainly have been involved, to a greater or a less degree, in the nebulous matter of the comet. The earth, in fact, reached this point a month later than the comet, and did not, at any time, come within about fifty millions of miles, or half the distance of the earth from the sun. This comet, at its greatest distance from the sun, departs about six times the earth's distance, or somewhat beyond the orbit of Jupiter. Its last appearance was in 1838.

These are the only comets of whose periods we have any certain knowledge. There are, however, two others whose periods have been stated; but the times are not yet arrived for testing the accuracy of the predictions. One of these comets appeared in 1264, and again in 1556—an interval of 292 years; and it is expected again in 1848. The other comet was observed by Newton in 1680, and he predicted its return in 575 years; a long period must therefore elapse before the truth of this calculation, or conjecture, can be verified. The tail of this comet, which is several times noticed in history, was of such vast extent, that when the head of the comet was in the horizon, the extremity of its tail was in the zenith.

It is thus abundantly proved that comets are revolving bodies like the planets, and that they obey the same great laws of attraction. There seems, notwithstanding, to be a marked difference in their physical constitution. Comets appear to be composed of a substance extremely light compared with that of the planets. Thus Halley's comet which, as we have seen, was detained a year and eight months by the attraction of Jupiter and Saturn, seems to have had little or no reciprocal influence upon either of these planets. A still more striking instance to the same purpose, occurs in a comet which appeared in 1770, which, according to the highest authority, had been revolving in an orbit that did not admit of its being seen from the earth, completing a revolution in about fifty years; but passing in 1767 within a short distance of Jupiter, its course was entirely changed, so as to bring it near to the earth in 1770, and cause it to complete

one revolution about the sun in the short period of about five years and a half. Coming near to Jupiter a second time, in the remote part of its course, its orbit is again shifted to one requiring a period of about twenty years. In one of these cases the comet is proved to have passed so near to Jupiter, that its attraction to this planet was two hundred times greater than its attraction to the sun. Still, it not only had no sensible effect upon the planet itself, but it did not even disturb the motion of its satellites, although it passed between them and the body of Jupiter.

This comet came nearer to the earth than any other whose path is known. Its least distance was about six times that of the moon. It was retarded in consequence, about two days, by the earth's attraction. If the comet had the same quantity of matter with the earth, it must have affected the length of our year to the amount of nearly three hours; but it did not exert the least perceptible influence. If the year had suffered an alteration to the amount of two seconds, it would probably have been detected. It is hence inferred that the quantity of matter contained in this comet could not exceed the five thousandth part of that contained in the earth.

What is here stated with respect to the lightness of comets; agrees very well with the result of actual observation. Many comets have appeared that seem to be destitute of any nucleus or solid, compact mass at the centre. They are apparently composed of a matter resembling the thinnest vapour, so that the light of the faintest star which is obscured by the least perceptible fog, scarcely suffers any diminution by penetrating many thousand miles of this substance. The comets of Encke and Biela, and some others, seem to be thus constituted. In those cases where there are signs of a solid nucleus, it is for the most part of small extent. It has been estimated in two instances at less than thirty miles in diameter. The comets of 1807 and 1811 were supposed by Sir W. Herschel to have each a diameter of about five hundred miles.

Even where there is the appearance of a compact mass at the centre, there is still surrounding it the same nebulous appearance of vast extent, which seems to constitute, in other cases, the whole matter of the comet. This nebulous appearance, instead of being of a uniform or a progressively increasing brightness from the circumference inward, is often apparently composed of one or more rings or strata, many thousand miles in thickness, alternating with fainter portions, an appearance not unlike what would be presented to a spectator viewing from a distance our earth with its different layers of clouds, one above another separated by portions of transparent atmosphere.

A remarkable circumstance has been observed in two or three instances, which consists in the great contraction of the body of the comet as it approaches the sun. Encke's comet was carefully examined at different distances from the sun, varying from about one hundred and fifty to fifty millions of miles. In the former case, its diameter was twenty-five times as great as in the latter, and its bulk, of course, was reduced to about one sixteen thousandth part by a reduction of its distance to one-third part. This enormous change in its dimensions, has been ascribed by some to the varying density of the sun's atmosphere, the gaseous matter of the comet, being, as is supposed, more and more condensed as it penetrates the denser strata of this supposed medium, just as a balloon is enlarged or contracted, according as it is situated in a denser or rarer part of the earth's atmosphere. Others suppose, that as the parts of the nebulous matter of the comet are distant, and held together by so feeble a power, they revolve in a degree independently of one another, each having its own perihelion, whereby they are brought nearer to each other, as they approach the sun, and separate again farther and farther as they depart from it. Another hypothesis is that the nebulous matter of the comet, like fog or common vapour, which disappears before the rising sun, ceases to be visible, in like manner, as the comet approaches its perihelion, in consequence of the heat to which it is exposed, and that it is restored to its sensible form, when it is sufficiently withdrawn from the influence of the solar rays.

But the most obvious and striking characteristic of comets, especially to the majority of observers, is the luminous train called the *tail*, with which they are generally attended. We say generally, since this is not by any means a constant appendage. Many comets have appeared, as those of Encke and Biela, that seemed to be as round as the planets. Others again, as the comet of 1836 for instance, have exhibited a train only in certain parts of their course and not in others: sometimes it is visible only in certain parts of the earth, and in certain states of the atmosphere. Where it exists at all it seems to increase as the comet approaches the sun, and to be more conspicuous, and of greater extent, after the comet has passed its perihelion than before. It is also remarked that the direction of this luminous train is, for the most part, in a line opposite to the sun. There are remarkable exceptions, however, to this rule. It is found in some instances, to be right angles to a line joining the comet and sun. In its common position the train is often curved more or less, the extreme parts being left as it were a little behind, while the preceding or convex portion is observed to be somewhat brighter than the rest, as though there were some rare medium which condensed the luminous matter and slightly impeded its motion. Where the train is not curved, it is often remarked that the light is faintest in the middle and strongest towards the edges, as though it were a hollow cylinder, or truncated cone. The tail is sometimes divided into two or more branches, lying in some cases the same way, but often more or less inclined to each other. The comet of 1744 had six tails, opening and diverging like the sticks of a fan, but curved at the same time like a sickle. They were each about 4° broad, and from 30° to 44° long. The light was so strong, that they were distinctly perceived after the sun rose. Single trains have been observed of all lengths less than 100°. The absolute lengths have been computed in many instances, and found to vary from a few millions to one hundred millions of miles.

Nothing that deserves the name of an explanation has yet been offered, respecting the constitution and manner of production of this curious phenomenon. The hypothesis most in vogue, is that which ascribes it to the mechanical impulse of the solar rays, penetrating such an extent of vaporous matter very feebly held together by the small central attraction; just as a discharge of shot through a mass of cotton or eider down may be supposed to carry a portion of this light substance with it, to

different distances. This notion is of course wholly inapplicable to those cases where the luminous train does not lie in the direction of the sun's rays. It is, moreover, less entitled to consideration, now that light itself, instead of being an emanation of particles, is beginning to be more generally considered as depending upon the undulation of a medium, which medium may be that very ether indicated by Encke's comet, as already mentioned.

It seems to be taken for granted, that this train is a material substance, and that this substance is of the same nature with the nebulous atmospbere of the comet; and that it once made a part of that atmosphere. But how is it separated and borne along to sucb enormous distances? What power retains it, and keeps it in its relative place, when, as it should seem, the attraction exerted by such an inconsiderable mass as that of a comet, is wholly insufficient? What should cause the extremity of the tail to move ten or twenty times as fast as the comet itself, when it is so many times farther from the sun, as it must do in order to keep the same position with respect to the central body? If it is said in reply, that it is perpetually renewed by every new emission of solar light, we beg leave to ask what becomes of these long trains, when they have served their momentary purpose, and why should they not continue to reflect the light that falls upon them, long after they have been generated? thus producing a broad lumiuous tract througbout the space over which tbe tail has swept.

It is indeed, generally admitted, that more or less of the luminous train is left bebind, and wholly detached from all connection with the body whence it proceeded. This is rendered probable, not only for the reasons above suggested; but also from the fact that in several instances this appendage is found to become shorter and shorter, and less and less conspicuous, at each successive return. Not only the train, but the body of the comet seems to be wasting away, as in the case of Biela's, which at its last return could scarcely be discerned with a good ten feet telescope, in the most skilful hands; and was actually invisible to the inhabitants of America; for the want of sufficient aid to the natural sight.

If comets are thus destined to part with the matter of which they are composed, and the celestial spaces are continually strewed with this bighly rarified, and all but immaterial substance, we have arrived at a probable source of that medium, which seems to have been detected by the motions of Encke's comet. We may remark also, that the substance surrounding the sun, and lying in the direction of its equator, and extending many millions of miles, giving rise to what is called the *zodiacal light*,* may have the same origin, that is, may be composed of the tails of innumerable comets.† Indeed, the sun itself may be said to have a tail or train extending in opposite directions, borrowed, perhaps, by little and little from each passing comet; and this train may in some degree resemble that of a comet, and be a conspicuous object to a spectator situated in such a manner as to admit of its being seen unmixed and unobscured by the light of his own atmosphere.

It will be inferred, we are aware, from what we have said, that comets may, by slow degrees, be dispersed through the celestial spaces and absorbed into tbe sun's atmosphere, and thus cease to be comets any longer. There is also another way in which they may terminate their existence as comets This very medium, this solar atmosphere, strewed with the wreck of we know not how many of these ill fated bodies, seems fitted to prove destructive to many more. Encke's comet, by its short period and frequent returns, affords the best opportunity hitherto presented, of judging of the consequences that must result from such a state of things. This comet is evidently approaching nearer and nearer to the sun, each revolution. There is no cause known to astronomers that can save it from its impending fate; and hereafter, when we shall have become familiar with the return of comets, and are well acquainted with their diminishing periods, it may become an object of emulation to astronomers, to calculate and foretell the time when a comet shall terminate its career by falling into the sun. The comet of 1680 has already approached so near as to be only one sixth of the sun's diameter distant when in perihelion. It appeared in Newton's time, and no doubt seems to have existed in the mind of that great man, that it would, at some future epoch, cease to revolve. This opinion he retained to the latest period of his life, and he seems to have made some estimate of the time that might be expected to elapse before such a catastrophe would take place; "possibly," he says, "after five or six revolutions."

This idea of the destiny of comets, that they were designed ultimately to fall into the sun, and be consumed, was the more readily received formerly, when tbe sun was regarded as a mass of ignited matter, that required replenishing like our domestic fires. Light itself, moreover, being supposed to be an emission of particles, it seemed to be necessary to find some means of supplying this continual exhaustion of the sun's substance. Other and more remote phenomena were referred to as strikingly analogous to the case in question. Several of the fixed stars had, at different times, suddenly burst forth with great splendour, so as to surpass even Jupiter and Venus, and in some instances to be visible in the day time. These stars, it was supposed, owed their increased brilliancy to a fresh supply of fuel in the form of a precipitated comet. Such are the conjectures and speculations of some of the greatest men the world has produced.

But among astronomers of the present time, who allow this tendency in cometary bodies toward the sun, without being able to point out any sufficient check, some maintain that matter so exceedingly rare, and indeed matter of any kind and of any form witb which we are acquainted, must in all probability be completely volatilized by the solar heat, and absorbed into the solar atmosphere, long before it could reach the body of the sun. It is believed that some comets already give indications of a rapid approach to this sort of dissolution.

Anotber fruitful subject of speculation relates to the possibility or probability of a comet's coming so near the earth, as to occasion a great revolution in the physical condition of our globe. The nearest approach of one of tbese bodies that has hitherto

* This light is of a pyramidal or leaf-like shape, having the sun for its basis and the ecliptic, or rather the solar equator, for its axis, or line of direction. It is faint like the tail of a comet, or the milky way, and is for the most part confounded with the twilight, except in low latitudes, where it is more frequently seen. But in the month of April, in the evening, or in October, in the morning, it makes so large an angle with the horizon in the temperate latitudes, and extends so high, that it may be seen after the twilight has ceased in the evening, and before it begins in the morning.

† Herschel's Astronomy Art. 626.

taken place, so far as our knowledge extends, was that of the comet of 1770, as already mentioned. The least distance, in this case, was no less than 1,456,840 miles. No effect upon the earth or moon was perceived, although an exceedingly slight one, if it had existed, must have been detected.

A much nearer approach than this is liable to take place, from the known position of the orbits of other comets whose elements have been calculated. The great comet of 1680, so remarkable in other respects, is also distinguished as coming near to the earth's path. Its least distance is about twice that of the moon, or 440,000 miles. Its attractive force, therefore, would be only one-fourth of that of the moon, on the supposition that it contained as much matter. Even this force would be exerted only for a short time, not long enough, probably, to produce any sensible disturbance in the waters of the ocean. The effect of the moon in causing the tides, is the accumulated result of a long continued effort, with comparatively little change in the position of the attracting body, or the direction of its action. With all the force that the moon actually exerts, it would have very little, if any, sensible influence in disturbing the ocean, if it were to dart by us with the rapidity of the comet under consideration.

Biela's comet has already been described as coming so near the earth's track, as to be liable actually to involve a part of the earth at least, in its nebulous atmosphere. Let us now see what chance there is of the earth's being, for instance, within half a million miles either way, of the particular point of danger. There being in the circumference of the earth's orbit six hundred millions of miles, in round numbers; on the supposition that the comet passed the point in question, once a year, there would be an equal chance for each portion of a million of miles, that the earth would be there at that juncture; of course, according to the doctrine of chances, the earth may be expected to be within half a million of miles of the point under consideration, once in six hundred years, it being supposed that the comet passes this point once a year. But as it actually passes it only once in six years and three quarters, the above period must be increased in the same proportion; that is, the near approach of the earth and comet, above referred to, cannot be supposed to occur more than once in about forty centuries.

Allowing the possibility of the event in question, what would be the probable consequences of a near approximation, or even a rencontre? Not, so far as we can judge, a violent shock or concussion, like that occasioned by one vessel running against another, not a sudden and overwhelming rush of the waters of the ocean over the land. This comet of Biela, according to the best information we possess, seems to be merely a collection of the thinnest possible vapour. Let us imagine a person in a balloon approaching a cloud. The object might seem a formidable one; but the æronaut is plunged in the vaporous mass before he is aware of it. He is sensible of no material change; he has felt no jar. He only perceives a little obscurity in the objects around him, and wonders what has become of the cloud that seemed so menacing in the distance. So it may be with regard to comets. We may have already encountered one of these bodies without ever dreaming of it. We may have been enclosed in its vast envelope without perceiving any change, except, perhaps, some peculiar hue in the atmosphere, or some uncommon tint in the objects about us. We are passing frequently through parts of space that have, in all probability, been visited by the enormous train of some comet, and which, we have reason to believe, still retain traces of this substance. It is hardly possible to conceive that the earth should have escaped all contact with an element so widely diffused, or that it should fail to attract and appropriate to itself some portion of this matter. We see the zodaical light, supposed to be identical with the substance in question, embracing the orbits of Mercury and Venus, and of course enveloping these planets, and mixing with their atmospheres, and subjecting them to all the consequences that we seem to dread from the introduction of matter so foreign. There is little reason to believe that the earth is exempt from the same lot, and little ground to apprehend evil from a condition that seems the necessary result of the original constitution of the system to which we belong. What the tail of a comet is, it were vain to conjecture. Some future chemist may perhaps tell us. But whatever it be, whether watery vapour or any other vapour, or one of the permanent gases, or something different from all these, and wholly unlike any of our aëriform substances, there is little reason to suppose that it would, on the whole, be injurious. Even if it were deleterious in itself, if it were the most virulent poison, still, according to all that we know of it, it is so exceedingly rare, and would constitute so very small a proportion as an ingredient of the air we breathe, that no evil could be apprehended from it. The fixed air and other noxious gases, that are disengaged by volcanoes and discharged into our atmospbere, may often be found to exist in much greater quantity, compared with the vital principle, especially in the vicinity of the volcano, than we are liable to be exposed to, from the largest influx from a comet's train. Such an accession of matter to our globe, although it is believed to have actually taken place, perhaps more than once, has not as yet been distinctly and satisfactorily recognised. There are several instances on record, of a peculiar state of the atmosphere, that has been ascribed to the presence of matter from this source. The following are Mr Arago's statements and reasoning upon this subject.

"The fog of 1783 began nearly on the same day (the 18th of June) in places very distant from each other, as Paris, Avignon, Turin, Padua. It extended from the northern coast of Africa to Sweden; it was also observed in a great part of North America; it lasted more than a month. The air, at least that of the lower regions, did not appear to be its vehicle, because in some places it came on with a north wind, and in others with a south or east wind; travellers found it on the highest summits of the Alps. The abundant rains which fell in June and July, and the highest winds, did not disperse it. In Languedoc, its density was occasionally so great that the sun did not become visible, in the morning, till it was 12° above the borizon; it was very red the rest of the day, and might be looked at with the naked eye. This fog or smoke, as some meteorologists have called it, had a disagreeable odour. The property by which it was particularly distinguished from common fogs, was its being, by all accounts, very dry, whereas most fogs are moist. At Geneva, Sénebier found that the hair hygrometer of Saussure, which in real fogs stands at 100°, ranged in the midst of this, as

low as 68°, 67°, 65°, and even 57°. Besides all this, there was one very remarkable quality in the fog or smoke of 1783; it appeared to possess a phosphoric property, a light of its own. I find, at least in the accounts of some observers, that it afforded, even at midnight, a light which they compare to that of the full moon, and which was sufficient to enable one to see objects distinctly at a distance of two hundred yards. To remove all doubts as to the source of this light, it is recorded that at the time there was a new moon. Such is the state of the facts; let us now see whether, in order to explain them, it will be necessary to admit, that in 1783 the earth was immersed in the tail of a comet.

"The fog of 1783 was neither so constant, nor so thick, as to prevent the stars being seen every night, in all the places where it occurred. Admitting therefore that the earth was in the tail of a comet, there is but one way of explaining why the head of that comet was never seen, and this is, by supposing, that it rose and set almost at the same time with the sun; that the superior light of that luminary rendered it invisible; and that this conjunction of the sun and comet lasted more than a month. At a time when the proper motions of comets appeared subject to no rule, when every one disposed of them as he pleased, considering them as mere meteors, the supposition we have just made might be admitted; but now that comets are known to all astronomers to be heavenly bodies, as obedient as the planets to the laws of Kepler; now that the mutual dependence of distance and velocity is known; now that observation and theory combine to prove that all these bodies *necessarily* move in their orbits with a rapidity that increases as they approach the sun, it would be contrary to all established principles to admit that a comet, interposed between the sun and earth, could revolve about the sun in such a manner as to appear constantly near it for more than a month, to a spectator on the earth! It is in vain to attempt to explain the difficulty attending an exact conjunction, by supposing the tail very large. If it were as large as that of 1744, the objection would remain in all its force. The dry fog of 1783, then, whatever may have been said of it, was not the tail of a comet."

A dry fog, similar to the one above described, was noticed in different quarters of the globe, in 1831. It was observed on the coast of Africa on the 3d of August, in the south of France on the 10th, and at New York on the 15th of the same month. This fog was so thick, that the sun might be looked at all day, without any coloured glass or other protection to the eye; and, in some places, the sun remained invisible till it had risen 15° or 20° above the horizon. When clearly seen, it was often remarked, that the colour was changed to an azure blue, and sometimes to greenish or emerald green. At night the heavens occasionally became clear, so that the stars could be seen. Where this fog was observed and while it continued, there was a very unusual degree of light during the night. In Siberia, at Berlin, and at Genoa, in the month of August, the smallest writing could sometimes be read even at midnight. This phenomenon, however, was not general, even in Europe. At Paris and some other places, it was but faintly perceived, and for a few days only. If a comet, therefore, had passed at this time, between us and the sun, no reason can be given why it was not seen. We are hence obliged to conclude, as in the former case, that the fog was not attributable to a comet.

The following are the remarks of Arago upon the agency which this extraordinary fog is supposed by some persons to have had in the uncommon pestilence which made its appearance in Europe, about the same time.

"Many authors have chosen to see some connection between the extraordinary fog of 1831 and the entrance of the *cholera morbus* into Europe. This opinion reminds me of what an old English traveller, Matthew Dobson, says of the effects of a periodical wind on the west coast of the continent of Africa, which is called the *Harmattan*. On reading over the original narrative just as I was about to send these pages to the press, I was so struck with several points of resemblance between the properties of the air, where this wind prevails, and that which is filled by the dry fogs of Europe, that I determined to give here a short analysis of that memoir. The reader will observe, that out at sea, some distance from the shore, the Harmattan loses its peculiar qualities; and he will remember, that in 1783 the dry fog was not perceived in the middle of the Atlantic, although it darkened at the same time the atmosphere of Europe and America. He will see also, that all fogs of this description are not fatal. A wind that blows three times each season from the interior of Africa to the Atlantic Ocean, is called the *Harmattan*. On that part of the coast which lies between Cape Verd (lat. 15° N.) and Cape Lopez (lat. 1° S.), the Harmattan is chiefly felt in December, January, and February. Its direction is between E.S.E and N.N.E. It commonly lasts two days, sometimes five or six. It is always a moderate wind. A *fog* of a particular kind, and thick enough to impede at noon all but the red rays of the sun, always presents itself where the Harmattan blows. The particles, of which this fog is formed, are deposited on the grass, on the leaves of trees, and on the skin of the negroes, in such profusion as to produce a white appearance. Of the nature of these particles we are ignorant; we only know that the wind carries them but a short distance from the shore. A league out at sea the fog is much lighter; and, at the distance of three leagues, it disappears entirely, although the Harmattan is still felt in all its force. The *extreme dryness* of the Harmattan is one of its most striking characteristics. When it lasts some time, the branches of orange and citron trees die; the covers of books (even when they are shut up in tight trunks, and have additional covering of linen,) warp as if they had been before a large fire. Pannels of doors, window-shutters, and articles of furniture crack and often break. The effects of this wind upon the human body are not less remarkable; the eyes, lips, and palate become dry and painful. If the Harmattan last four or five days together, the skin of the hands and face comes off; to prevent this, the natives rub their bodies all over with grease. After what has been said of the fatal effects of the Harmattan on vegetables, it may be thought that this wind *must be very unhealthy*, whereas quite the contrary is observed. Intermittent fevers are completely cured by the first breath of the Harmattan. Patients reduced by the excessive bleeding practised in that country, recover their strength; remittent and epidemic fevers also disappear, as if by enchantment. Such is the salutary influence of this wind, that, while it lasts, infection cannot be communicated

even artificially. This assertion rests upon the following fact. In 1770, there was an English vessel at Wydah, called the *Unity*, which was loaded with three hundred negroes. The small pox having appeared among some of them, the owner determined to inoculate the rest. All who were thus operated upon, before the Harmattan began to blow, took the infection. Seventy were inoculated the second day after that wind began to blow, and not one of these had the disease, or the least eruption. However, some weeks afterwards, when the Harmattan no longer blew, these very persons took the disorder. It is also added, that during the second appearance of the malady, the Harmattan began to blow again, and sixty-nine slaves, who had it, all recovered. The country over which this remarkable wind passes before it reaches the coast, is for two hundred and forty miles composed of verdant plains, entirely open, some woods of small extent, and here and there a few rivers and inconsiderable lakes."

Other disasters, and indeed all sorts of malign influences, have been attributed to comets by authors every way entitled to respect; and this has been done without taking the trouble to assign any definite cause for effects of so various a character, or to point out any connection whatever, depending upon the known laws of the world we live in. Mr Arago espouses the cause of comets, and maintains their innocence.

"An English physician," he says, "whose name is not unknown to philosophers, Mr T. Forster, has lately treated particularly of this subject. According to him, '*It is certain*, that ever since the Christian era, the most unhealthy periods are precisely those in which some great comet has appeared; that the approach of these bodies to our earth has always been accompanied by earthquakes, eruptions of volcanoes, and atmospheric commotions; whereas, no comet has ever been seen during the salubrious periods.' Those who will take the pains to examine critically the long catalogue, given by Mr Forster, will not, I am sure, be led to the same conclusions. The whole number of comets mentioned by historians, reckoning from the beginning of the Christian era to the present time, is about five hundred. At the present time, when the heavens are examined attentively and skilfully, when comets that can be seen only by the aid of the telescope are no longer overlooked, the average number of these bodies is more than two for each year. If we agree with Mr Forster, that their influence begins before they are visible, and continues some time after, we shall never be without a comet to account for every phenomenon, misfortune, or epidemic that can occur. This remark is applicable also to the memoirs of the celebrated Sydenham, who was an advocate for the influence of comets; to the dissertations of Lubinietski, &c. Mr Forster has moreover, I ought to say, so extended, in his learned catalogue, the influences of comets, that it would seem there is scarcely a phenomenon which is not to be ascribed to them. Hot and cold seasons, tempests, hurricanes, earthquakes, volcanic eruptions, violent hail-storms, great falls of snow, heavy rains, overflowings of rivers, droughts, famines, thick fogs, flies, grasshoppers, plague, dysentery, contagious diseases among animals, &c., are all registered by Mr Forster, as consequences of the appearance of some comet, whatever may be the continent, the kingdom, the town, or the village so visited. By thus making out for each year a complete catalogue of all the miseries of this lower world, any one might foresee that a comet would never approach the earth, without finding a part of its inhabitants suffering under some calamity or other. By a strange accident, well worthy of remark, the year 1680, the year of the most brilliant of modern comets, the year of its passage so near the earth, is that which has furnished our author with the fewest phenomena. Let us see what is to be found under this date? "*A cold winter, followed by a hot and dry summer; meteors in Germany.*" As to maladies, we find no record whatever! How then, with such a fact as this before us, can we attach any importance to the accidental coincidences noted in other parts of this table? How are we to regard this celebrated comet of 1680, which, blowing now hot and now cold, increased the frosts of winter, and the heat of summer? In 1665, the city of London was ravaged by the plague. If, with Mr Forster, we attribute this to the remarkable comet which appeared the same year, in the month of April, how are we to explain why the same pestilence did not extend to Paris, to Holland, to any of the numerous town in England except the capital? This difficulty must be met; and until it is done away, we shall expose ourselves to the ridicule of every man of sense, if we attempt to make comets the messengers of evil. Let us now see which are the comets whose tails may have mingled with the earth's atmosphere; and then search the histories and chronicles of the same period, to discover whether, at the same time, there were not manifested, *in all parts of the earth at once*, unusual phenomena. Science may take note of such researches; though, to tell the truth, the extreme rarity of the matter which composes the tail, would lead one to expect nothing but negative results; but when an author appends to the date of a comet, like that of 1668, the remark that *all the cats in Westphalia were sick;* and to the date of another, that of 1746, the circumstance, very little analogous to the former to be sure, that an *earthquake* destroyed in *Peru* the towns of Lima and Callao; when he adds that, during the appearance of a third comet, a *meteoric stone* fell in *Scotland*, into a high tower and broke the wheels of a clock; that, during the winter, wild pigeons appeared in large flocks in *America;* or still more, that, *Ætna* or *Vesuvius* threw out torrents of lava,—we must consider him as displaying his learning to little purpose. If, in thus registering contemporary events, he thinks he has established some new relations between them, he is as much mistaken as the old woman, mentioned by Bayle, who, never having put her head out of her window without seeing coaches in the Rue St Honoré, imagined herself to be the cause of their passing.

"I wish, for the honour of science, that I could have dispensed with taking any serious notice of the ridiculous ideas I have just adverted to; but I am satisfied that this exposition will not be without use, for Gregory, Sydenham, and Lubinietski have many followers among us. Moreover, if you will only listen, in those circles which are called fashionable, to the long discourses of which the approaching comet is the theme, you may decide whether there is any room to congratulate ourselves upon the pretended diffusion of knowledge, which so many *perfectionists* are pleased to consider as the distinguishing feature of our age. For myself, I have long been cured of these illusions. Under the brilliant but superficial gloss, with which the purely

literary studies of our colleges cover all classes of society, we almost always find, to speak plainly, a profound ignorance of those beautiful phenomena, those grand laws of nature, which are our best safeguard from prejudice."

CONDE, Don Jose Antonio, a Spanish historian, was born at Peraleja, in the provence of Cuenca, and educated at Alcala. He was intended for the legal profession; but loving literature for its own sake, and having from an early age applied himself to the oriental languages, he obtained an appointment in the royal library at Madrid, and was thus fixed in the very situation where he could be most usefully and most happily employed. His first publication consists of translations from Anacreon and Theocritus—a juvenile production which was well received. His second was a version of that part of Edrisi the Nubian's Geography which relates to Spain: the Arabic text was published with it, and he added notes, which, according to M. Silvestre de Sacy, are of little value. He was, however, a diligent student, who neither mistook the nature of his own talents, nor overrated them, but was contented to be one of the pioneers of literature. His merits were properly appreciated, and the academy of history appointed him their antiquary and librarian; but the even tenor of his life was interrupted by Bonaparte's usurpation of Spain. A few men of letters (to the honour of letters and of the Spanish character they were but few) took what they supposed to be the strongest side, and acknowledged the intrusive government. Conde was one of that unworthy number, and he accepted, under the intruder Joseph, the appointment of *archivista*, or keeper of the records for the home department. Consequently he found it necessary to fly when the French were driven from Madrid, and the battle of Vittoria made him an exile. He took shelter in France, and remained there in retirement till the year 1817, when he was permitted to return into his own country. The indulgence of the government was not extended further, and therefore he was not restored to his office in the royal library; but the academy of history replaced him on their list of members, and reappointed him their antiquary. A proper distinction was made here; the government could bestow nothing more than forgiveness upon one who had given his assent and consent to a foreign usurpation, but it did not interfere with the proceedings of the academy, which, as a literary body, took no cognizance of political offences. In Conde's case the offence proceeded wholly from moral weakness; he was one of those men whose minds are too much occupied by their favourite pursuits to have any room for ambition, or for avarice. In 1820 he published the first volume of his Moorish History, the great object to which he had devoted his life; he died before the second was prepared for the press; it its rough state, however, he had brought the work down to the conquest of Granada, which terminates the history of the Moorish dominion, but not of the Moors, in Spain. His unpublished papers consisted of a translation of the Canticles, with notes, which are said to display much erudition; and a collection of Arabic poems, with Spanish versions, and a dissertation upon the effect which the Arabian has produced upon the Spanish poetry. His library was sold in London; it was singularly rich in manuscripts, and in the rarest Spanish books. Conde's history of the dominion of the Moors in Spain has been translated into French by M. de Marlès, Paris, 1825, 3 vols. 8vo.

CONEY, John, an eminent engraver, was born at Ratcliffe Highway, and was apprenticed to the late Mr Byfield the architect, but never followed architecture as a profession. At the age of fifteen, he made his first drawing for sale. It was a view of Westminster abbey, and it found a purchaser in Mr Orme the printseller. In 1815, he published his first work; a series of eight views of the exterior and interior of Warwick castle, drawn and etched by himself. About the year 1816 he was engaged by Mr Joseph Harding to draw and engrave the fine series of exterior and interior views of the cathedrals and abbey churches of England, to illustrate the new edition of Dugdale's "Monasticon," edited by Sir Henry Ellis. These plates occupied the attention of Mr Coney for fourteen years, and are executed with consummate skill. In 1829, he commenced a series of "Engravings of Ancient Cathedrals, Hotels de Ville, and other public buildings of celebrity in France, Holland, Germany, and Italy, drawn on the spot, and engraved by J. Coney: with illustrative descriptions by Charles Heathcote Tatham, Esq." It was originally intended to be in twelve parts, but only eight were published. In 1831, he commenced another similar undertaking, half the size of the first work, intituled, "Architectural Beauties of Continental Europe, in a Series of Views of remarkable edifices, civil and ecclesiastical, in France, the Low Countries, Germany and Italy, engraved by J. Coney from his own drawings, taken on the spot, with descriptions and historical illustrations by H. E. Lloyd." This handsome work consists of twenty-eight large plates, and fifty-six vignettes. A view of the interior of the cathedral of Milan, the same size as the larger work, was published after Mr Coney's death, for the benefit of his widow. Mr Coney was employed by Mr Cockerell, the celebrated architect, to engrave a very large general view of Rome, and another plate as a companion to it, which has not yet been published. He also engraved numerous plates for the account of the law courts at Westminster, lately erected by Sir John Soane. He died on the 15th August, 1833, aged forty-seven.

CONGLETON; a market-town in Cheshire, seven miles from Macclesfield, twenty-four from Manchester, and fifty-eight from Birmingham. It is situated upon the south of the river Dane, over which is a handsome bridge, erected in 1782. A charter of incorporation was granted by James I., in 1625, under which the town was governed until September, 1835, when the new municipal act directed it to be governed by a mayor, six aldermen and eighteen councillors—the corporate body to be styled the "mayor, aldermen and burgesses of the borough of Congleton;" it likewise divided the town into three wards. In 1637, the celebrated president Bradshaw served the office of mayor of Congleton. The original manufactures of Congleton consisted of gloves, and leather laces, called *Congleton points;* these have long since given place to a very considerable trade in the manufacture of silk, silk throwing, silk spinning, &c.: the first silk mill was established here in 1754, and the trade has greatly increased since then; the ribbon branch is also one of consequence in the town. The appearance of Congleton, although ancient, is clean and respectable, and that of the surrounding country very pleasing. Population in 1841, 9228.

CONIA, or CONIINE; a vegetable alcali, discovered by Brandes in the hemlock, conium maculatum, of which it is the active and poisonous principle. It is an oily liquid, having a strong odour of hemlock. It is excessively poisonous, and appears, by the experiments of professor Christison, to cause death by inducing paralysis of the muscles used in respiration. Probably, if artificial respiration were kept up till the action of the poison passed off, life might be restored.

CONISBOROUGH; a parish in the west riding of Yorkshire: population in 1841, 1441. The village of Conisborough is of very high antiquity; by the Britons it was called *Caer Conan*, and by the Saxons *Cyning*, or *Conan Burgh*, both signifying a royal town; it must once have been a place of some importance, as it is handed down that it was the seat of a civil jurisdiction, which comprised twenty-eight towns. It stands on a lofty elevation, about six miles to the south-west of Doncaster, overlooking a rich and wooded country, through which the river Don meanders. The church, which is dedicated to St Peter, is an ancient and remarkable structure, exhibiting the several characteristics of the Norman, the early English, and the later or decorated styles of architecture; so that it has evidently been built at different periods.

*Conisborough Castle* figures in one of the principal scenes in "Ivanhoe." Its ruins still remain. Tradition assigns it a very remote antiquity, whilst several modern antiquaries seem disposed to attribute the foundation of the present structure to William, the first earl of Warren, to whom the surrounding estate was granted by William the Conqueror. It is, however, indisputable, that a strong-hold of some sort existed here during the times of the Saxons. Geoffrey of Monmouth, and some of our old historians, indeed, have carried back its origin to a period preceding the Saxon invasion of Britain, but the narrative which they give must be looked upon as fabulous. The Conisborough estate subsequently passed from the family of Warren, to Richard, earl of Cambridge, who assumed the name of Richard of Conisborough in consequence, it is said, of the castle having been his birth-place. After his death it passed into the hands of his grandson, king Edward IV., and remained in the possession of the crown for more than two centuries, when it was given by James II. to Lord Dover. It afterwards became the property of the family of its present possessor, the duke of Leeds.

CONWAY, or ABERCONWAY; an ancient walled town, in Carnarvonshire, North Wales, situated upon the estuary of the Conway river, distant from Bangor thirteen miles, N. E. There are several small vessels belonging to this port, and ships are sometimes repaired here. The Conway river being navigable for ten miles above this place, a tolerable import-trade is carried on by means of flats, which can lower their masts in passing under the suspension bridge. Trefriw is the highest place to which vessels can reach, where a good quay is now formed, and slates exported in large quantities. Llanwrst, Llansaintfraid, Eglwys Vact, and other places, derive considerable advantage from the navigation of the Conway; bark, timber, and slate are the chief exports; coals and necessaries for domestic consumption the only imports. Population of town and parish in 1831, 1245, in 1841, 1358.

The *Conway*, i. e. *the Chief River*, takes its rise in a pool called Llyn Conway, situated in the mountainous district above Penmachno and Yspythy, in the county of Carnarvon, constituting the boundary between the counties of Denbigh and Carnarvon, for a length of seventeen miles, to a townland adjoining Plas Madoc, whence, after a further course of about twelve miles, it falls into the sea below Conway. Few rivers in England or Wales, in so short a course, afford so great a variety of beautiful scenery, and contribute so much, at the same time, to the convenience of the counties through which it flows. Llyn Conway, and the early part of the river, abound in excellent trout, and flow through a most wild and romantic district. Below Lima Hall, the Conway falls in a noble cataract, called the Falls of the Conway, about fifty feet, the stream of water shooting directly from one aperture in the solid rock, to a considerable distance, and then descending into a rocky basin, surrounded by hanging woods. This grand scenery is succeeded by the placid gliding of the stream through the beautiful and fertile vale of Llanwrst. One mile below this town, at Trefriw, the river becomes navigable. The river has been celebrated from a very early period for its pearl fishery.

The *fortress of Conway Castle* stands in a picturesque situation a short distance from the mouth of the river Conway, at the northern extremity of the county of Carnarvon. It was erected in 1284, by command of Edward I., as a security against the insurrections of the Welch. Soon after its erection, the royal founder was besieged in it, and the garrison almost reduced by famine to a surrender, when they were extricated by the arrival of a fleet with provisions. At the commencement of the civil wars, it was garrisoned in behalf of king Charles, by Dr John Williams, archbishop of York, who, in 1645, gave the government of it to his nephew, William Hookes. Two years afterwards the archbishop was superseded in the command of North Wales by prince Rupert, at which he was greatly offended. He endeavoured to gain some redress from the king, but without success, and, enraged at the injury, he joined Mytton, the parliamentary general, and assisted in the reduction of Conway. The town was taken by storm, August 15th, 1646, but the castle held out till the 6th of November. It was afterwards granted by king Charles to the earl of Conway and Kilulta, who had scarcely obtained possession, ere he ordered an agent to remove all the timber, lead, iron and other materials. He did not, however, reap the fruits of this Vandal order, for the vessel in which the materials were being conveyed to Ireland, was wrecked, and all the property lost. Thus unroofed and unprotected, the castle has suffered much from wind and weather, but it still presents a fine specimen of an ancient fortress. It is in the form of an oblong square, and stands on the edge of a steep rock, washed on two sides by an arm of the river. The walls are all embattled, and are ten or twelve feet thick. They are flanked by eight vast circular embattled towers, each of which formerly had a slender machicolated tower rising from the top.

The *Iron Suspension Bridge* crosses the river opposite the castle, and forms part of the communication between Liverpool and Dublin. It was commenced in 1822, with a view to supersede the dangerous ferry which formerly existed here; the

designs for it were by Mr Telford, and it was opened to the public on the 1st of June, 1826. The towers, on which the chains rest, are built in the same style of architecture as the castle, so as to harmonize with it; and a slight effort of the imagination would lead us to suppose that the present structure was the original drawbridge of the ancient fortress. The chains of the bridge are fastened at the west extremity into the rock beneath the castle, and at the eastern end into an island rock, which is connected with the shore by an embankment, upwards of 2000 feet in length. The length of the bridge, between the supporting towers, is 327 feet, and the height of the roadway, above high water of spring-tides, about fifteen feet. An additional postage of one penny is charged for every letter conveyed over Conway Bridge, and this money is applied to the repayment of the sums advanced for the building.

COOKE, George, an eminent engraver, was born in London, January 22, 1781. His father was a native of Frankfort on the Main, who settled in England early in life, as a confectioner, and having realized a moderate competency, retired from business about thirty-five years ago. In the choice of a profession, George was probably influenced by the example of his elder brother, William, who had previously become the pupil of Angus, the publisher of a set of "Noblemen's and Gentlemen's Seats." In conjunction with William Cooke, and also separately, George Cooke executed many plates for the Beauties of England and Wales, which are marked with strong indications of a sedulous care and eagerness to excel the characteristics of all his productions. The extensive series of plates, illustrating Pinkerton's "Collection of Voyages and Travels," absorbed, for several successive years, the greater part of his attention. During the progress of this publication, William Cooke had projected and commenced the first edition of "The Thames," to which George Cooke contributed only three plates, Monkey Island, Temple House, and the Gateway at Tilbury Fort. "The Thames" was the precursor of "The Southern Coast of England," a work memorable on many accounts, and of incalculable importance for its action both on the public taste and on the art of engraving. The first number came out January 1, 1814, and continued at intervals until the appearance of the sixteenth and last, in the spring of 1826. Of this series of plates, George Cooke engraved one third. An improved edition of "The Thames" followed, containing some tasteful and elaborate specimens of graphic skill from his hand. For Hakewill's "Italy," and the "Provincial Antiquities and Picturesque Scenery of Scotland," he executed some interesting plates: in the former two of Naples, the Campo Vaccino of Rome and Florence; in the latter, Edinburgh from the Calton Hill, after Turner, Edinburgh from St Anthony's Chapel, and Edinburgh from the Braid Hills, both after Calcott. Of the Edinburgh views in particular it is not too much to assert that at the time of their appearance they were unequalled. In 1819 appeared Allason's "Pola" with thirteen plates, of which the frontispiece, a magnificent architectural composition after Turner, and five others, are from George Cooke's accomplished graver. On the 1st of May, 1817, appeared the first number of "The Botanical Cabinet," undertaken by him in combination with the Messrs Loddiges of Hackney. For many years he resided at Hackney, in front of Loddiges' garden. Ten plates, small indeed and slight, but full of accurate and tasteful discrimination, were supplied monthly by his indefatigable hand for nearly seventeen years; the last number, completing the twentieth volume, appearing in December, 1833. Mr Cooke died on the 27th of February, 1834, at the age of fifty-three. He was one of the founders of the Artists' Joint Stock Fund, a member of the Calcographic society, and one of the nine engravers united for the purpose of engraving and publishing the pictures in the National Gallery; in furtherance of which design, he had selected for his first plate, and made some progress in etching from the picture, Rubens's admirable landscape, presented to the Gallery by the late Sir George Beaumont. In the practice of his profession he deemed himself peculiarly fortunate, inasmuch as it fell to his lot to produce some of the earliest plates engraved from the works of Turner, Callcott, and Stanfield, respectively; the first in the "Southern Coast," 1814, the second in the "Provincial Antiquities of Scotland," 1819, and the third in his own "London," in 1827. He left a widow and six children.

COOKE, William, an English barrister, was born in London—where his father, a respectable jeweller, resided—in the year 1757, and received his education in the neighbourhood of the metropolis. He was a member of Lincoln's Inn, and was called to the bar in the year 1790. At an early period of his career he devoted himself to the study of the bankrupt laws, and at length acquired, in that department, a most extensive practice. It was creditable to the lord Chancellor Eldon to select him as one of the commissioners of bankrupts; an office which he honourably filled for many years. He principally distinguished himself as the author of a valuable work on the bankrupt laws, the first edition of which was published in the year 1785. It passed through several editions, and was long esteemed the best book on the subject. The seventh edition was edited by Mr Roots. In 1816, he was appointed king's counsel; but soon afterwards became so afflicted with severe and frequent attacks of the gout, that he was compelled to absent himself on many occasions from court, and at length gave up his attendance there, and confined himself to chamber practice,—answering cases, chiefly in bankruptcy, and taking arbitrations, of which kind of business he had a most extensive share. In 1818, he went to Milan, as a commissioner to take the depositions of witnesses against the late queen. When subsequently attacked in parliament for thus assisting in that investigation, he intimated that the matter had proceeded farther than he contemplated, and that he had not been fairly treated. He returned to England from this memorable mission in 1820, and resumed his attention to chamber business—answering cases and taking arbitrations, till he finally quitted the profession in 1825; having thus practised as a barrister for thirty-five years. After that time, he principally resided at his house at Lenham, in Kent, where he died in Sept., 1832. His reputation rested chiefly on his well-known book, which, however, he lived long enough to see reduced almost to a dead letter by new statutes, both on the rules of law and the mode of its administration.

COOTE, Charles, an advocate in Doctors' Commons; was the son of Mr John Coote, for many years a bookseller in Paternoster Row, and the author of several dramatic productions, none of

which, we believe, were ever acted, although three of them were printed. He was educated at Saint Paul's school; was matriculated as a member of Pembroke college, Oxford, May 29, 1778, took the degree of B.A. April 10, 1782, and Dec. 30, 1784, was elected a scholar on the Benet or Ossulstone foundation in that society. He proceeded M.A. June 21, 1785; B.C.L. by commutation, July 10, 1789, and D.C.L. July 14, following, and was admitted into the chartered college of doctors of law on the 3d Nov. in the same year. Deeply imbued with classical learning and a love of literature, he soon applied himself to those pursuits which were most congenial to his mind. For some years he edited the Critical Review, at a time when Dr Southey, the late Mr Pinkerton, D'Israeli, and other eminent literary men, contributed their talents to that well-known periodical. The first fruit of his application to original composition was the "Elements of the Grammar of the English Language," 1788—a work of deep research and learning, interesting both to the grammarian and to the philologist, and which was highly commended, and soon reached a second edition. He next wrote a "History of England, from the earliest dawn of record to the peace of 1783;" which appeared in nine volumes at different times from 1791 to 1797; to which he afterwards added another volume, bringing down the history to the peace of Amiens in 1802. Of this history it may be said, that it exhibits a clear narrative, with well drawn characters, and sentiments strictly constitutional and impartially just. About the beginning of the present century he published a "History of the Union with Great Britain and Ireland." In 1804 appeared his "Lives of English Civilians;" a unique work, which no one had hitherto attempted. In 1815 he published the History of Ancient Europe, a comprehensive work, upon which he bestowed much time and pains. Graii Elegia sepulchralis cultu Græco donata; 1794. Life of Julius Cæsar; 1796, 12mo. A Continuation to Russell's History of Modern Europe, from 1763 to the Pacification of Paris in 1815; two vols. 1818. The same, continued to 1825; Lond. 1827. A Continuation to Mosheim's Ecclesiastical History by Maclaine to the 18th Century; six vols. 8vo. 1811. History of Ancient Europe, with a Survey of the most important Revolutions in Asia and Africa; being a third volume of Russell's Ancient Europe; 1815. Dr Coote died, Nov. 19, 1835, aged seventy-six. Of a retired disposition, with much of that eccentricity and indolence which often accompany literary merit, he passed through his profession with credit and respect, but without that emolument which was perhaps due to his abilities had they been more exerted. Of a nervous and morbid temperament, and therefore easily yielding to despondency in any adverse state of his affairs, he was nevertheless cheerful and gentle in manners, and conscientiously upright in his dealings. He left three sons and two daughters.

CORAL. (*a.*) The substance called Coral appears to have been considered a vegetable production until about the year 1720, when M. de Peyronnel of Marseilles commenced a series of observations, by which he ascertained that coral, instead of being a plant, was the produce of a living animal of the polypi tribe.

The Coraliferous Polypus is a small, soft, whitish body, rounded in form, and presenting, on microscopic examination, a mouth, a stomach, and a root-like base. It propagates both by division of its body into parts, which form an animal as complete as itself, and by ejecting eggs from its mouth. The method in which the polypus secretes the coral, which, when taken from the sea, is in stalks about a foot high and half an inch thick, is understood to be as follows: An egg or new animal, when ejected, falls upon some body, to which, from its gelatinous nature, it adheres. On this foundation it spreads and moulds itself, till at length from the middle of it a sort of excrescence rises upwards, containing the germ of a new animal, which attains its growth by degrees, and sends up a similar extension. These deposit calcareous or chalky matter in the middle, and by the constant generation of new polypi, and the secretion of additional matter, the coral, at the end of ten years, which is the period necessary for its perfect growth, has attained the height and thickness mentioned. It is of various colours—red, vermilion, and white, the latter being most common, and consequently least valuable. When taken out of the sea, it is covered with moss and marine vegetable matter, and is generally somewhat softer and duller in hue than it ultimately becomes.

The coral fisheries form a very considerable trade in several parts of the Mediterranean. From the hollows and caverns of the rocks, where it takes root, the coral is brought up with nets; it also grows, but in less quantities, on the sides of the ocean crags. The greatest height to which it attains is never above a foot, and its usual thickness is about that of the little finger, though often much less. The most extensive fisheries are those carried on in the straits of Messina, off the Sicilian coast, and about three miles distant generally from the land. The fishermen have divided the whole tract, about six miles in length, into ten parts. Every year they fish only in one of these parts, and do not interfere with it again till ten years have elapsed, for the purpose of bringing away only such coral as has attained its full growth.

The appearance of the coral as it is observed in the sea, is said to resemble a miniature forest, from its great quantity and branching character. The greatest portion is procured from a depth of from sixty to a hundred and twenty-five feet; but some fisheries are carried on to the depth of nine hundred feet. Those on the coasts of Marseilles, Barbary, and Trapani, are the principal rivals to the Sicilian fisheries in the European market, but none of them produce the coral in equal quantities, or of equal quality, with the latter. From Messina 3000 pounds are said to be exported annually; the price of which is so much affected by the colour and quality, that, while some of it is valued at ten guineas a pound, other portions are considered not worth ten pence. The vermilion-coloured coral, being the rarest, is the most expensive. The common red, however, brings a high price also, when the quality is good. Chemical analysis has proved that the coral consists of carbonate of lime, a species of chalk, for it dissolves completely in aqua-fortis, or nitric acid.

Though we may regard with some degree of wonder the production of stalks of coral by a small oyster-like polypus, our astonishment cannot fail to be increased when we consider, that, by an animal of the same size and species as the coraliferous polypus, whole reefs of great extent, and even islands, have been founded and originated. The animal or polypus that accomplishes this is called

the Madrepore, and has long been erroneously considered as identical with the coral polypus; hence the masses of land alluded to have received the appellation of coral reefs and islands. These have never yet been found in any extent excepting in the Pacific and Asiatic seas, but in these immense waters the coral rocks and reefs are abundant.

The principal groups of islands of coral formation are, from the New Hebrides, eastward, the Friendly islands, Navigation islands, and the Society islands; and, to the northward of the latter group, the Marquesas. These groups are separated from each other by channels or seas, wider than those which separate the individual islands which form the respective groups; but all these waters abound with shoals and minor islets, which indicate the existence of a common base, and show that the processes by which they will hereafter be united above the level of the sea, are in constant operation.

The structure and progress of these islands towards a state of fitness for the habitation of man, has been thus described. At a vast but unknown depth, below the surface of the sea, the insects attach themselves to the upper points and ridges of rocks, which form the bottom of the ocean, and many of which, in the Pacific ocean, are supposed to be of volcanic origin. Upon these foundations, the little architects labour, building up by means of the secretion before described, pile upon pile of their rocky habitations, until at length the work rises above the sea, and is continued to such a height, as to leave it almost dry at low water, when the insect leaves off building upon that part. A solid rocky base being thus formed, sea-shells, fragments of coral, and sea-sand, thrown up by each returning tide, and broken and mixed together, by the action of the waves, become in time converted into a sort of stone, and thus raise up the surface higher and higher. The heat of the sun so penetrates this mass of stone, that it breaks off into flakes, and these flakes are again raised one upon another by the waves, at high water. The ever active surf continues to throw up the shells of marine animals, and other materials, which fill up the crevices between the stones, and the sand upon the surface being now undistributed, offers to the seeds of trees and plants cast upon it by the waves, a soil upon which they rapidly grow, and overshadow the dazzling whiteness of the new formed land. Trunks of trees, washed into the sea by the rivers from other countries and islands, find here a resting place, and with these come some small animals, chiefly of the lizard and insect tribes. Even before the trees form a wood, the sea-birds nestle among them, and soon the stray land-bird takes refuge in the bushes. At a latter period, man appears, builds his hut upon the fruitful soil formed by the corruption of the vegetation, and calls himself lord and proprietor of this new creation.

These islands vary in extent, as well as in the degree of *finish* to which they have arrived. Of thirty-two examined by captain Beechey, the largest was thirty miles in diameter, and the smallest somewhat less than a mile. They were of various shapes, and all formed of living coral, except one, called Henderson's island, which was partially surrounded by it; and they all appeared to be increasing in size by the active operations of the *Zoophytes*, which are gradually extending, and building up above the level of the sea those parts which are at present below the water. Twenty-nine of the number had *lagoons*, (or morasses) in their centres, within which, it has been observed, the smaller species of coral seek a quiet abode, and labour silently and slowly, in throwing up banks, which, in process of time, unite with islets that surround them, and at length fill up the *lagoon*, so that what was at first a ring of little islands, becomes one connected mass of land. All these islands are situated within the action of the trade wind, except one (Oeno,) which is on the verge of it, and follow one general rule in having their *windward side* higher, and more protected than the other, and not unfrequently, well wooded, while the other is only a half drowned reef, or wholly under water. At Gambier and Matilda islands this inequality is very conspicuous; the weather-side of both being wooded, and, of the former, inhabited, while the other sides were twenty or thirty feet under water, where they might be perceived equally narrow and well defined. One of these islands (Malden island,) presented the singular appearance of perpendicular coral cliffs, elevated eighty feet above the level of the sea; these were of dead coral, but the outside of the island was surrounded with a belt of living coral, sloping from the cliffs, to from three to twenty-five fathoms under water, after which it descends abruptly to a depth where a 200-fathom line does not reach the bottom. The surface of this island is flat; and it is not easy to account for its present elevation, unless by an earthquake or sub-marine volcanic explosion.

Gambier Group consists of five large islands and several smaller ones, the whole (as well as the five separate islands,) being enclosed in a reef of coral, forming an irregular diamond-shaped space. The older islands are volcanic, and the largest rises in two peaks, 1248 feet above the level of the sea. The outer belt of coral descends abruptly outside to an unfathomable depth, but slopes inward by a decreasing declination, to about 120 or 150 fathoms below the surface; and within this enclosure, a number of low islands are already formed, and others are in progress, rendering it almost certain that, in process of time, the whole space will become one island, each of the original islands being also inclosed with its own reef. These are inhabited by a race of men with fine Asiatic countenances, wearing mustachios and beards, and they appeared to be more civilized than those of many other islands. Specimens of spars, crystals, alumine, jasper, and chalcedony, have been procured on these islands by the naturalists who accompanied captain Beechey. They are covered with a deep soil, and well wooded with trees and evergreens of different kinds.

It is a fact worthy of remark, that on all these islands, a plentiful supply of fresh and sweet water may be obtained, by digging three or four feet into the coral; and that even within one yard of high water mark, such a supply is to be found. This is an important consideration to the navigators of those seas, where such a resource is so valuable, on account of the extreme heat to which they are exposed; and it shows also the powerful properties of the coral, in divesting the sea-water of its saline particles. These properties, which are probably *chemical*, and not merely the effect of filtration, have never been examined or experimented upon, but they furnish a subject of consideration for the naturalist, and the man of science.

Of the rapidity with which the coral grows, we

are not in possession of sufficient information, on which to form a correct judgment. Matilda, or Osnaburg island, is supposed to have been only a reef of rocks, when the Matilda was wrecked there, in 1792; it is now an island, fourteen miles in length, and covered on one side with tall trees, and the lagoon in the centre is dotted with columns. The coral, therefore, has, probably made a rapid growth since 1792, although Captain Beechey found two anchors, of a ton weight each, and a kedge anchor, which he supposes belonged to the Matilda, thrown upon the sunken reef of live coral, and around these anchors, the coral had made no progress in growing, while some large shell-fish, adhering to the same rock, were so overgrown with coral, as to have only space enough left to open about an inch. It is probable, however, that the oxide proceeding from the anchors may have been prejudicial, as far as its effects extended, to the coral insect, and thus have prevented its growth. All navigators, who have visited these seas, state that no charts or maps are of any service after a few years, owing to the number of fresh rocks and reefs which are continually rising to the surface; and it is perfectly accordant with the instincts of animals, to continue working without intermission, until their labours are consummated, or their lives are extinct.

CORFE-CASTLE; a borough in the isle of Purbeck, on the coast of Dorsetshire, twenty-three miles from Dorchester. The population is mostly employed in the stone quarries and clay pits, for which the place is celebrated: the stone is exported to London, and the clay to the potteries in Staffordshire. Previous to 1832, this place had returned two members to parliament since the early part of the reign of Elizabeth. But it was disfranchised under the reform act, and is now united with Wareham in its elections. The constituency consisted of about fourteen resident, and thirty non-resident holders of burgage tenements, and the mayor was the returning officer. It was an ancient borough by prescription, and was incorporated by queen Elizabeth. The government was vested in the mayor and eight burgesses, who, after they had passed the mayor's chair, were called "barons." When the borough was visited under the commission of corporation inquiry, the corporate body refused to give any information respecting their charters and privileges; and from the nature and constitution of this body, and the situation in life of the inhabitants, no particulars on these points could be obtained by the commissioner. In his report it is stated that "the town of Corfe-Castle is of mean appearance, and presents no indication of present prosperity, or of progressive improvement. The census of 1831 shows that although there were at that time no uninhabited houses in the borough, there were also none that were in a course of building; that the number of inhabited houses was 156, the number of families occupying them 193, and the total population, 1841, 1946.

The *castle* is on the north side of the town, on a steep eminence, and a bridge of four high and narrow arches, which is thrown across a deep moat, now dry, connects it with the town. Edward the martyr was stabbed at the gate of this castle, by order of his mother-in-law, who, with her son, then inhabited it. It has been a place of considerable strength, and from its position on the southern coast, was doubtless regarded as of great importance to the protection of the kingdom. The castle was most probably the precursor of the town.

CORK, (*a.*) The importation of cork in a manufactured state, into this country, is virtually prohibited by a very high duty; and the import duty upon it in a rough state is also considerable, being eight shillings per cwt. The price of cork, including the duty, varies according to its quality, from £20 to £70 per cwt.

COS, now STANCO, (*a.*) The island of Cos is one of the most interesting and valuable in the Grecian archipelago. Like Patmos, it is classed among the Sporades; and its northern-most point is scarcely four miles from the coast of Asia Minor. It lies at the mouth of the great inlet in that continent, which in ancient times was called the Ceramic Gulf, and which now bears the appellation of the Gulf of Boudroon. Its length is about five-and-twenty miles, and its breadth about five.

The surface of this island is of a diversified character, presenting an agreeable intermixture of the most delightful plains with gentle hills, occasionally swelling into mountainous elevations, more especially towards the eastern side. The fertility of the soil has always been remarkable; the Greek geographer, Strabo, speaks of it as "very fruitful," in the age of Augustus; and the Venetian writers of the seventeenth century, picture it as "abounding in all things necessary to the human state." There are now extensive orange and lemon plantations close to the town of Cos; and the very large export of the fruits which they yield, to all parts of the archipelago, is one of the chief branches of the trade which the island still enjoys. Mr Turner characterizes Cos as being in the most wretched condition of all the islands which he had seen in the Mediterranean, with the single exception, perhaps, of Cyprus. The number of its inhabitants amounted formerly to 20,000; at the close of the last century it was reduced to 10,000, and twenty years ago it just exceeded 8,000, there being then about 5,000 Turks, 3,000 Greeks, and fifty Jews. We have few means of estimating the population at the present day; it has been stated as low as 4,000 souls. The causes of the decrease are to be found in the ravages of the plague, which has often carried off a third of the inhabitants,—in the consumption of the many wars which the Turks have waged within the last hundred years,—and in the loss occasioned by emigration.

COSMETICS, (*a.*) the term usually applied to those preparations which are employed to beautify the skin. The two most important objects of cosmetics are: 1st, to impart a red colour to the cheeks; and 2d, to whiten the other parts of the skin of the face and neck.

The substances which more or less resemble the natural red of the face are red sandal wood, alkanet root, Brazil wood, bastard saffron, and cochineal. The common *rouge* used at the theatres is prepared by pounding benzoin, red sandal wood, Brazil wood, and alum, in brandy. This mixture is then boiled until three-fourths of the liquid have evaporated: an intensely red paint remains, into which a piece of soft cotton is dipped, with which it is applied to the face. Vinegar is sometimes substituted for the brandy on the score of economy; but as both these fluids injure the skin, it is not uncommon to extract the colouring matter from the dye-woods, and form ointments therewith by means of balm of Mecca, butter of cacao, or spermaceti.

If the colour is too intense, it is mixed with finely powdered chalk. Another mode of making rouge is to mingle cinnabar (a compound of sulphur and mercury, of a vivid red colour) with chalk, and with some oily substance, to form an ointment. Such rouge is very injurious. *Rouge dishes* are also common. These consist of small saucers, containing a layer of rouge in a dry state, and are prepared principally in Portugal: they are imitated in London, but clumsily, since the colour is dirty and muddy. Two other preparations, called *Spanish wool* and *Oriental wool*, have been long known to and esteemed by, the dealers and consumers of rouge. Wool is impregnated with the colour, and formed into cakes about the size of a crown piece, by the Spaniards, and somewhat larger by the Chinese: the latter is most esteemed, since it affords (as a modern pharmacopist observes) "a most lovely and agreeable blush to the cheek." Both these descriptions of wool are imitated. *Colour Boxes*, beautifully painted and japanned, are also imported from China. But all the descriptions of rouge must give place to pure *carmine*, which for colour cannot be surpassed, and, unlike many of the former cosmetics, is said not to injure the skin. Carmine is obtained chiefly from the colouring matter of cochineal, an insect of Mexico.

Cosmetics for whitening the skin consist of washes and powders. The most esteemed washes are elder-flower water and rose-water; also cold-cream, the *ceratum album* of the Pharmacopœia. This is a compound of white wax, oil of almonds, and rose-water, and is useful for slight excoriations, tenderness of the skin, &c. A wash is frequently sold under the name of "Pearl-water," but it contains no preparation of pearl whatever, and consists of Spanish oil soap dissolved in spirits of wine with oil of rosemary. The choicest of all powders for the skin is "pearl-powder," a costly article, since it is prepared by dissolving real pearls (the small *seed*-pearls of the pearl-fishery) in an acid, and precipitating the powder by means of an alkali. This powder is also prepared at a cheaper rate from mother-of-pearl and also from oyster-shells; but these furnish a powder which is not impalpably fine, and they have also a shining appearance, which at once shows that art has been employed to whiten the skin; whereas the real pearl-powder more nearly resembles the appearance of the skin. The most successful imitation of genuine pearl-powder is bismuth powder, a fine white powder, which has this disadvantage, however, that it will turn black on coming in contact with fumes of sulphur or with sulphuretted hydrogen gas. Ladies frequenting spas should therefore be cautious in its use, for if the water contain sulphuretted hydrogen gas, they are apt, on taking a drink, to become suddenly "black in the face," to the great consternation of their friends and admirers.

COSTUME, (*a.*) The subject of costumes is curious and interesting. Dress is an object of universal attention. It occupies no small portion of our time and thoughts; it forms a distinct and important trade, or, we should be more inclined to call it, profession; it constitutes a very large branch of commerce. We should be somewhat at a loss to determine whether civilized or barbarous nations are most occupied by the cares of the toilet. Certainly a full dressed savage makes a wonderful display of art. His painted countenance and head, the nicely adjusted colours, the tortured hair, the elaborate ornaments, the pouch and moccasin skilfully embroidered with variegated porcupine's quills, the cloak of gorgeous feathers or cloth of bark, indicate plainly, that his attention has been directed with no little patience and contrivance to this all-important object. And we doubt not, that as much care is expended upon his toilet, as the votary of civilized fashion gives to his.

We should be almost afraid to compute how large a portion of time among civilized people is occupied, either in dressing, or in thinking about dress. Much less, probably, is so used in this country, than in others, where a stricter etiquette prevails; but we still think we are within bounds in supposing that one-third of the waking hours of the community, including what is employed in making and repairing, is devoted to the subject of dress.

Half-civilized nations, who show more sense in their costumes than any others, barbarous or refined, must, we imagine, be somewhat at a loss to account for their neighbours' bestowing so much attention upon a subject, which for them is entirely settled. Where a man, or still more a woman, knows what colours and what forms of dress she is to use, being the same precisely that her ancestors have worn for centuries, and where the idea of fashion never dawned, there can be but little time wasted upon dress. We only wonder, what the fair inhabitants of such a country can find to supply the place of that deep interest which the subject affords to the happier heirs of civilization. "What a monstrous idea!" we fancy some of our fair readers to exclaim; "a country where there is no such thing as fashion! where one must dress like one's grandmother; where there is no difference between morning and evening dresses; where there are no such things as walking dresses and carriage dresses, no distinctions of bonnets, and no change of forms! What becomes of the spirit of a woman in such a stupid country?"

What, then, are the causes of these differences in different countries? Why do the Persians at this day, dress as the Persians did in the days of Cyrus the Great, while the forms of British and French dresses have been constantly changing since the time of the Roman conquests? Is there a deep philosophy of dress to account for this? Is there any theory to explain why civilization makes changes in costume, or to account for each successive change?

These questions we do not pretend to answer. We will give our readers a slight sketch of some of the different remarkable costumes of ancient and modern times, and the various changes which have been made with the advance of civilization. Perhaps they may deduce some theory, to suit themselves, from the facts we shall present them. An ingenious observer might possibly discover in the costumes of different nations, a harmony with the prevailing tastes and the general character of the people. There is certainly no way in which taste, whatever it is, displays itself more than in dress; and, as far as nationality of costume exists, there might perhaps be found a certain correspondence or identity in the taste in dress and in the fine arts. Thus the Egyptian costume would possess a character very different from that of Greece or Rome. The dress of one age would differ in style from that of another in the same country. Each would be marked by the peculiar taste and the prevailing spirit of the time. The costume of a cavalier in the thirteenth or fourteenth century

would be as different from that of a Roman in the days of Cicero, as a Gothic church is from a classic temple; and each costume, in point of taste, might be marked with the same spirit that inspired the architecture of the different periods.

Nothing can be more ungraceful than the costume of the Egyptians, as it is represented in their sculpture. In the Capitol at Rome, there is a collection of very ancient Egyptian statues. The dress consists of a cloth or mantle, wrapped closely round the body, so as to show the whole outline of the form, and descending in some to the knees, in others to the feet; and bound so tight as to fetter the limbs. The arms are left bare; on the head is a small cap, shaped in some like a coronet, from each side of which descends a sort of wing or pendant, making the neck appear of the same breadth as the shoulders; the whole costume, giving the living man, as near as possible, the look of a mummy. A representation of a priest, in Denon's work on Egypt, also shows very nearly the same costume. The cap and its grotesque wings are precisely like those in the statues; and the dress consists of a tunic descending not quite to the knees, and fitting close to the body. Now there certainly is some resemblance in the stiff, graceless, and square form of this costume, to the equally stiff, graceless, and square architecture of Egypt. That people were certainly distinguished by bad taste, but there was a harmony in its badness; their colossal structures and their gigantic statues, their sphinxes and their other monsters, all are marked with the same monstrous taste. There is a resemblance to these in the costume. We do not mean that there is an imitation. The caps are not made in the shape of a pyramid or a sphinx, nor the vest in the form of any other structure. But there is in the costume a certain taste, which is obviously the same that gave birth to the architecture. It is essentially Egyptian, as strongly marked as the pyramid or obelisk, and could not be mistaken.

The Asiatic dress is entirely different. The costume of the Parthians was a long flowing tunic or gown, reaching nearly to the ancles, and gathered round the waist with a girdle. The sleeves, which reach to the wrists, were made tight, so as to show the form of the arm; the trowsers were loose and gathered at the ancle; and the cap was low, and shaped somewhat like a coronet. This dress, as represented in ancient paintings, resembles almost exactly the costume of the Persians at the present day. The dress of the Persian ambassador, whom we met in Paris a few years since, might have been thought a copy from the antique, so closely did it correspond to the representation of the ancient Parthian. The Parthian sovereigns are represented on the coins, sometimes bareheaded, with long bushy hair and profuse beards very elaborately curled, sometimes wearing a cap in the form of a truncated cone, inverted. The Medes and Persians generally wore a conical cap, sometimes truncated and much ornamented. The inhabitants of the countries bordering on the Black Sea and of the Archipelago, used the Phrygian cap, with the top bent forward, and long flaps descending to the shoulders.

We have particularly mentioned these various head-dresses, to show that all antiquity boasted nothing in the way of head-gear so absurd as the hats of the present day. Of all the articles of dress which the present age abounds in, there is none which we contemplate or wear with so little complacency or patience as a hat. For the fashion of other parts of dress, we can see some reason; but we are at a loss to discover the philosophy of this. It can hardly be called a covering for the head, as it only rests on the top, never covering the ears. The tall cylinder of the crown rises up several inches above the head, leaving a large space, which, for all we can discover, is perfectly useless. Then the hat must bind the forehead closely; otherwise a breath of wind will take it off. The most sensible head-gear which is worn in these days, is the cap which sailors call a *southwester;* fitting close to the head, and having a sort of cape which descends over the shoulders. But any kind of cap is better than a hat, which, we doubt not, is the invention of some unhappy wretch whose fair proportions nature had curtailed; and who endeavoured to make up for his deficiencies by a lofty head-dress. Fashion, however, dictates, that hats shall be genteel, and caps otherwise; and who shall dare to dispute her decree?

The warlike dress of the Amazons, if we may believe the paintings upon antique vases, was very tasteful. It consisted of a tunic reaching not quite to the knee, and confined at the waste with a girdle. It came up round the throat and fitted close to the form above the waist. The sleeves were made tight and reached to the wrists. Over this tunic was worn a short cloak or mantle not longer than the tunic, fastened round the neck and flowing from thence. This garment resembles very much the short Spanish cloak worn by cavaliers in the sixteenth century. Finally, these ladies, with extreme propriety, and in keeping with their character, wore pantaloons. They were made to fit close, showing the form of the leg completely; and, in addition to their elegance, must have been extremely convenient. With the war dress, the Amazons wore a helmet, sometimes terminating in the beak of a griffin, the jagged crest of the animal forming the summit or back of the helmet. In peace these ladies condescended to put on the ordinary female costume.

In general, the Asiatic costume forms a remarkable contrast to that of Egypt; the one, loose, flowing, and graceful; the other, so contrived as to fit close to the form, and yet to make it appear more awkward,—without a single fold, square, dead-like. There is something very grand and imposing in loose and ample robes. We attach the idea of princely magnificence to them, and man seems to acquire double grandeur when thus arrayed. The fact is, that this mortal must put on a dress in order to look respectably. One tailor is not enough to make a man. He is not completely made till he has had nine of them at work upon him.

We come now to the classic costume, which we shall find to be completely in keeping with the taste displayed by the Greeks and Romans in other things. The first thing we notice with regard to the Greeks, is, the great care bestowed upon the arrangement of the hair. Writers on costumes distinguish the different ages, by the changes in the manner of arranging the hair. The earliest style was remarkable for primness, the hair being divided into symmetrical curls much in the corkscrew form; and the dress was made to correspond with this by plaiting it into straight and stiff folds. The hair was dressed in the same way for men as for women. After a little time, it became the fashion to gather

all the hair hanging down the back, by means of a riband, into a single bunch, leaving only two or three long slender ringlets hanging in front of the ears. At a later period, this bunch of hair hanging down behind, was gathered up and doubled into a club, while the side locks were allowed to descend as low as the breast. In the fourth era of Grecian barbarism, these long ringlets gradually shrunk away to a number of short curls about the ears, leaving the neck quite free. The hair and beard were arranged with extreme care, and were made to resemble the cells of a beehive, or a network of wire, the Greeks being very skilful in the use of the hot tongs.

The dress of Greek females was a tunic or gown, reaching to the feet, and fitting round the neck, with sleeves reaching to the elbows. Over this, was a second garment, which was intended only as an additional protection to the upper part of the person. It was a square piece of stuff, folded double, so as to show only half of the original width, and was worn with the doubled part upwards, so as to display the embroidered edge more fully, hanging down. This garment was suspended round the back and chest, passing under both arms. The centre was brought directly under the left arm, so that the ends met and hung down under the right; and it was kept in place by two clasps or buttons which fastened together the front and back part over the shoulders. The outer garment was called the *peplum*, and was used more on occasions of ceremony than for ordinary convenience, as it was very long and ample, and from the manner of putting it on must have been inconvenient to the wearer. It was sometimes wound double round the body, first under the arms, and then over the shoulders, and was not fastened by any clasps or buttons, but was kept on by the intricacy of the folds. The *peplum*, and the *pallium* or men's outer garment, gave occasion to a great display of taste in the manner of wearing, as the various combinations seem to be almost endless. Every variety which human ingenuity or fancy could devise in the manner of wearing this part of the dress, may be seen in the pictures on ancient vases; and it is supposed that the different degrees of grace, in the arrangement of this garment, indicated the degree of refinement in the wearer. At times the mode of wearing it was made to indicate the state of mind of the individual. Thus, it was drawn over the head by persons in deep affliction, or engaged in any solemn religious ceremony. For both of these reasons it was represented as drawn over the head of Agamemnon in the celebrated classical painting of the sacrifice of his daughter Iphigenia. Finally, the *peplum* served as a protection to the head in stormy weather; though travellers provided themselves with a flat-broad-brimmed hat, which they called a *petasus*, tied under the chin like a bonnet.

The dress of the Roman ladies was much like that worn by the Greeks. It consisted of the tunic, or *stola*, reaching to the feet, with long sleeves worn next the skin; then the *amiculum*, formed of two square pieces of stuff fastened on the shoulders; and, lastly, the *palla*, corresponding to the Grecian *peplum*, and very similar to the men's *toga*, except that it was more ample and was embroidered. The Roman ladies bestowed infinite pains upon the dressing of their hair. Like the Greeks, they used the curling tongs; and a number of antique busts, portraits of Roman ladies, in the Gallery at Florence, display a degree of care, ingenuity and skill in the coiffure, that would baffle the most accomplished hair-dresser of Paris at the present day. The hair was plaited, twisted, or woven, into the most elaborate and exquisite forms. Coronets, wreaths, diadems, baskets of flowers, clusters of grapes, were all represented by the cunning hand of the Roman hair-dresser. When the natural colour of the hair was not agreeable, it was stained, by means of a pomatum made of the dregs of vinegar and the oil of mastic. And when, after the conquest of Great Britain, the light golden hair of the Caledonian maidens gained the admiration of their conquerors, the ladies of Rome aspired to the same attraction by filling their hair with gold dust. They also used white and red paint for the face, besides a variety of washes and cosmetics.

The Roman ladies were very fond of jewels, and carried their passion for them to such an excess, as to become occasionally the subject of legislation. The principal personal ornaments were ear-rings, necklaces, and finger rings. The ear-rings were of gold, pearls, and precious stones, and were sometimes of immense value. Necklaces were also set with gems, and very precious, and were worn by men as well as women; every school-boy will recollect the story of Manlius Torquatus. In the manufacture of ornamental chains, the Roman or Greek jewellers displayed great skill. There was one kind of chain, in particular, wrought with such consummate art, that modern jewellers have in vain attempted to imitate it. The links are so cunningly shaped and knit together, that, when the chain is extended, it resembles a single bar of gold; and yet it is perfectly flexible in every possible direction, like a small cord. Chains of this kind in the most perfect preservation have been found in Pompeii. Finger rings were of various forms and devices, commonly set with engraved gems, and used as seals. A remarkable mention of these is in Cicero's Oration against Catiline, in which he speaks of the impress of the ring of Lentulus in his intercepted letter. Among the ornaments discovered in Pompeii, is a breast-pin, to which is attached a Bacchanalian figure with a *patera* or goblet in one hand, and a glass in the other; having bat's wings attached to his shoulders, and two belts of grapes passing across his body.

Indeed, if we may judge from the symbols of ancient coquetry, which that living tomb, Pompeii, has yielded up, the refinement of the toilet was as great with the Romans, as at the present day; and Pope's lines are as descriptive of a morning scene in the chamber of a Roman belle, as of a modern fine lady:

> "Unnumbered treasures ope at once, and here
> The various offerings of the world appear;
> From each she nicely culls with curious toil
> And decks the goddess with the glittering spoil.
> This casket India's glowing gems unlocks,
> And all Arabia breathes from yonder box;
> The tortoise here and elephant unite,
> Transformed to combs, the speckled and the white.
> Here files of pins extend their shining rows,
> Puffs, powders, patches."

How the poor things managed without the "Bibles" and "billets-doux," which should complete the line, is more than we know; perhaps some of our fair readers can suggest the substitute.

The dress of the men consisted of the *tunic*, which reached nearly to the knees, and had no sleeves. It was fastened by a girdle above the hips; and a stripe of purple, on the right side of

this garment in front, indicated, by its breadth, whether the wearer was of senatorial or equestrian rank. Over this, was worn the distinguished garment of the Romans, the *toga*. It has been disputed by antiquaries, whether the form of this garment was round or square. Mr Hope thinks it was semicircular. Beckmann says, that the Roman weavers made each piece of cloth just of the proper size for a toga, so that when it came from the loom it was ready for use, and probably had no seam. It was a loose robe or cloak, extending from the neck to the feet, closed below the breast, but open above, and without sleeves. It was ample, flowing, and graceful; and gave a dignified and majestic air to the wearer.

The materials used by the Romans in the manufacture of their garments, were chiefly linen and wool. The *toga* was woollen, and generally white, though mourners wore it black. Silk began to be imported in the latter days of the republic, nor did the Romans at first understand the manufacture of it. Afterwards they began to weave it, intermixing woollen thread. The fabric thus formed, was called *vestes coæ*, as it was invented in the island of Cos. It was very thin, like muslin or gauze, and is spoken of by Seneca as "woven wind." The term *bombycina*, undoubtedly the origin of our word *bombazine*, derived from *bombyx*, a *silk-worm*, was applied to this fabric.

The Romans commonly went with the head bare or only covered with the toga, except at sacred rites or festivals, on journeys, and in war. At the *Saturnalia*, they wore the *pileus*, or woollen cap, which was never permitted to be worn by slaves. They probably assumed it particularly at this festival, as a mark of distinction, because slaves during the Saturnalia were allowed almost unlimited license, and needed something to admonish them of their real condition. Roman travellers, like Greek travellers, wore the *petasus*.

There were various coverings for the feet. The *calcei* were somewhat like our shoes, and covered the foot entirely. They were provided with strings or lacings, which sometimes covered the ancle. Senators wore on the top of the *calceus*, a gold or silver crescent, as a mark of their order. The shoes of men were usually black; those of women were white, red, yellow, or of other colours. Buskins were also worn, covering only the sole of the foot and laced above. Soldiers wore boots reaching as high as the ancle. The legs were protected by bands of cloth wound round them from the thigh downwards.

The distinguishing marks, in the costume of the Greeks and Romans, were elegance, majesty, and grace. Their robes were loose and flowing. They were never intended to display the form, but to hang loosely around it, suggesting grace and beauty to the imagination, while they actually concealed the work of nature. The dress of these nations had a good effect upon the art of sculpture. In their costume, form was of much more consequence than colour; and it could therefore be perfectly represented by the marble. The sculptor at the present day is embarrassed in the representation of his hero. The modern costume, which, especially with military men, depends as much for its effect on colour as on form, and perhaps even more, cannot be adequately represented by marble; and the artist must clothe his statue in some foreign or imaginary garb, which every one knows he never wore. The Greek sculptor, on the contrary, found in every man he met a model, which he might study to advantage. And the immense variety of arrangement, which the ample robe allowed, must have constantly suggested to him some new idea with regard to the arrangement and flow of drapery; a subject of sufficient importance to occupy one chapter in Flaxman's admirable volume of Lectures. We can now do no more than hint at the effect thus produced on one of the fine arts.

We must hasten on to the dress of modern ages. The dress of the different Christian nations of Europe has not greatly varied in the same century; and the description of the costume of one nation may be taken as a specimen of all. We shall, therefore, give an account of some of the most remarkable costumes of England. The dress of the Anglo-Saxons consisted of shirts; tunics both long and short; surcoats, or sleeved gowns; cloaks or mantles; conical or Phrygian bonnets; shoes open in the middle, or on each side, and stockings. The legs were protected by breeches reaching to the knee. The hair was parted on the middle of the head, and hung down on each side, and the forked beard was worn. Women of the same era wore under-tunics with sleeves; upper-tunics like gowns; mantles or cloaks; kerchiefs or hoods; high-quartered shoes, and stockings.

But our readers will form a better notion of the Saxon dress from the following description, than it is possible to convey by our dry details. We quote from Scott's picture of Cedric the Saxon. "His dress was a tunic of forest green, furred at the throat and cuffs with what was called minever; a kind of fur inferior in quality to ermine, and formed, it is believed, of the skin of the gray squirrel. His doublet hung unbuttoned over a close dress of scarlet, which sat tight to his body; he had breeches of the same, but they did not reach below the lower part of the thigh, leaving the knee exposed. His feet had sandals of the same fashion with the peasants, but of finer materials, and secured in front with golden clasps. Behind his seat was hung a scarlet cloth cloak, lined with fur, and a cap of the same materials richly embroidered, which completed the dress of the opulent landholder when he chose to go forth."

Such was the general outline of the costume worn in England from the beginning of the tenth century. Some changes became visible in the fourteenth century. The head-covering for men assumed a great variety of forms, some of them very fantastic. They might be seen in all the variety of wreathed, turban-shaped, flapped, rolled, skull-capped, brimmed, with projecting ends, conical and cylindrical with or without brims, night-capped, tied under the chin, sometimes tongued over the head, escalloped, or simple bandages round the hair, &c. Spencers were also worn, buttoning in front and without sleeves. The shoes were long-pointed, and were joined to the stocking so as to form but one garment; and were differently coloured on each leg. The shirt, in the time of the Saxons and Normans, formed no ostensible part of the dress; but, at a later period, when tunics became doublets or waistcoats, they were made more open upon the neck and hosom, so as to display the shirt collar, which was richly embroidered.

In the fifteenth century, the costume became still more fanciful and grotesque. The doublets were cut and slashed, and nearly disjointed at the

elbows, in order to show the fineness of the shirts. The dress of the two sexes could hardly be distinguished from each other; men wore petticoats over their lower clothing; the doublets were laced in front like stays, over a stomacher; and the gowns were open in front to the girdle, and again from the girdle to the ground. The women wore gowns, enormous trains, and corsets over the other dress; and were particularly distinguished by two peculiarities, the horned and the steeple head-dresses; the former consisting of two elevations like a mitre worn edgewise, the other having only one elevation, of a pyramidal or conical form, and very high. Addison dates the existence of these enormous head-dresses a century earlier, though they probably appeared both in the fourteenth and fifteenth centuries. He says, "I do not remember in any part of my reading, that the head-dress aspired to so great an extravagance as in the fourteenth century; when it was built up in a couple of cones or spires, which stood so excessively high, on each side of the head, that a woman, who was but a pigmy without her head-dress, appeared like a Colossus upon putting it on. Monsieur Paradin says, that these old-fashioned fantages rose an ell above the head; that they were pointed like steeples, and had long pieces of crape fastened to the tops of them, which were curiously fringed, and hung down their backs like streamers."

In the sixteenth century, men wore gowns, boddices, close pantaloons, boots coming up to the middle of the thigh, cloaks, slashed doublets, petticoat breeches, and the remarkable trunk hose, which were breeches sitting close to the leg, and stuffed out enormously about the hips. The women appeared in long boddices, with or without skirts, and the famous farthingale, which was an immense hooped petticoat; they also invented a kind of doublet with high wings and puffed sleeves, a costume in full fashion in the beginning of the reign of Elizabeth. To give our readers a better notion of the costume of this period, we will again quote from Scott, who was extremely correct and minutely accurate in his descriptions. Whom, then, can we select, as a more worthy representative of the fashions of the sixteenth century, than that renowned cavalier Sir Piercie Shafton? His first appearance is thus described: "He has a crimson velvet bonnet, and long, brown hair falling down under it, and a beard on his upper lip, and his chin clean and close shaved, save a small patch on the point of it, and a sky-blue jerkin slashed, and lined with white satin, and trunk hose to suit." Again, in speaking of his wardrobe, Sir Piercie gives the following catalogue, which might drive a modern dandy to despair. "My rich crimson silk doublet, slashed out and lined with cloth of gold, which I wore at the last revels, with baldric and trimmings to correspond; also two pair of black silk slops, with hanging garters of carnation silk; also the flesh-coloured silken doublet with the trimmings of fur, in which I danced the salvage man at the Gray's Inn mummery." "There are four suits of as pure and elegant device as ever the fancy of a fair lady doated upon, every one having a treble and appropriate change of ribbons, trimmings, and fringes, which, in case of need, may, as it were, renew each of them, and multiply the four into twelve. There is also my sad-coloured riding suit, and three cut-work shirts with falling bands," &c. Such were the wonders of the wardrobe in the sixteenth century. The changes of dress since that time have been great. The subject is ample and amusing, as connected with politics, literature, and religion, as well as fashion, but we forbear to pursue it.

COTTON (*a.*) The cotton-wool of commerce is the delicately-soft down which surrounds the seeds of a tree, or rather shrub, found in most of the warmer latitudes of the earth, both in the old and new world. Of the genus to which this tree belongs there are at least nine or ten different species, nearly resembling each other; the most common is the *Gossypium herbaceum.* The cotton plant is extensively cultivated in different parts of the East Indies, in which countries it requires three seasons to bring the seed to maturity. It is also cultivated to a considerable extent in the Mogul empire, in the kingdoms of Siam and Pegu, in Sumatra, Persia, Arabia, Asia Minor, Natolia, Smyrna, and Aleppo: also, in Sierra Leone and other parts of Africa; particularly in Egypt, where, within these few years past, a very superior quality of cotton has been raised. The first imported into this country from Egypt was in 1823, and it now ranks in price and quality next to Sea-Island cotton. The cotton plant is also cultivated in Candia, Cyprus, Malta; and attempts have recently been made to cultivate it in Spain and the south of France. It is grown in some parts of the Russian empire: in Astracan, Orenburg, Levant, &c. But the chief supply of the British market is from South America, the East and West Indies, and the southern states of the American union; in all of which countries it is cultivated to a great extent.

The mode of cultivating the cotton plant depends upon its being *annual* or *perennial.* In general, the *annual* cotton-tree thrives best in a dry gravelly soil; it is also said to answer better in old than in newly cultivated lands. An exposure to the east, where the country is hilly, is considered by some to be of importance. The planters generally commence preparing their lands in February, and put in the seed during March and April. Holes are made in rows, at the distance of from seven to eight feet; into each of these an indefinite quantity of seed is laid, which in a short time begins to germinate; and as soon as the young plants rise to the height of six or seven inches, they are all, except two or three of the most vigorous, pulled up by the roots. The surviving plants are pruned twice before the month of August, so as to keep them down to the height of about four feet. This is absolutely necessary, as, when there is a great abundance, the difficulty of gathering the cotton is increased, without any addition to the quantity. At first, great attention is requisite to keep down the weeds and grass, which, if not eradicated, would soon destroy the young plants. The plant on its first appearance, and for a few weeks, is extremely tender; the slightest frost hurts or kills it. When this happens, a new crop is usually sown, though with dubious success. Light showery weather is said to be most favourable to the plentifulness of the crop. The gathering season commences partially in August, but is general in September and October, and continues when the weather is fine and dry, till Christmas, as the pods ripen and open gradually. On the coast of Guiana and the Brazils, the *perennial* cotton-tree is almost exclusively cultivated, and subjected to a different mode of treatment. Throughout the United States, the cotton-tree is an annual plant, and is not cultivated north of latitude 35°; but some

successful experiments as to the possibility of raising it, have been made in the neighbourhood of New York, or latitude 40°.

The cotton-plant is very liable to be injured by spring frosts, or very wet seasons, but more particularly by a most destructive insect called chenille, a caterpillar, which has been known to destroy whole fields of the most promising crops in a single night. Several travellers have given various accounts of this insect. Dr Chisholm describes it as being very beautiful, and about an inch in length, with stripes of white down the back, and one on each side, the intermediate spaces being a fine glossy black. The head is round and corneous, armed with two lateral corneous jaws, forming a powerful instrument of destruction. The most singular circumstances respecting this insect, are the fragrant scent that is emitted from the plant on which it feeds, though neither the plant nor the insect possess any scent whatever when separate: also the manner in which the ova are sometimes preserved for a whole year, without any appearance of the chenille, and resisting the efforts of the planters to destroy them, by the use of fire and other methods; and the surprising speed with which its ravages are carried to the most distant parts of the plantation.

After the cotton is gathered, it is exposed to the rays of the sun, on a tile or wooden platform, for two or three days, till it is perfectly dry and hard. The seeds are then separated by passing through between two wooden rollers which are slightly grooved, and about five-eights of an inch in diameter; this is called ginning the cotton; and when ginned, it is carefully picked, to free it from broken seeds, dried leaves, or yellow locks of cotton, &c. The practice of switching the cotton was introduced but not generally adopted, because not approved of by manufacturers. The cotton is afterwards compressed into bales, which is done by means of a screw-press; in this state it is sent to Europe.

Cotton is distinguished in commerce by its colour, and the length, strength, and fineness of its fibre. White is usually considered as characteristic of secondary quality; yellow, or a yellowish tinge, when not the effect of accidental wetting or inclement seasons, is considered as indicating greater fineness. There are many varieties of raw cotton in the market; their names being principally derived from the places whence they are brought. They are usually classed under the denominations of *long* and *short-stapled*. The best of the first is the *Sea-Island* cotton, or that brought from the shores of Georgia; but its qualities differ so much, that the price of the finest specimens is often four times as great as that of the inferior. The superior samples of Brazil cotton are reckoned among the *long-stapled*. The *Upland* or *bowed* Georgia cotton forms the largest and best portion of the *short-stapled* class. All the cottons of India are short-stapled. The inferiority of Bengal and Surat cotton is sometimes ascribed to the defective mode in which it is prepared; but it is doubted whether it can be grown in India of a better kind. The raw cotton of the Indian islands has hitherto been almost entirely consumed on the spot. A small quantity of very superior cotton has been imported from New South Wales.

The manufacture of cotton has been carried on in Hindostan from the remotest antiquity. Herodotus mentions that, in India, there are wild trees, that produce a sort of wool, superior to that of sheep, and that the natives dress themselves in cloth made of it.

The earliest notice of cotton being brought into England appears about the year 1430, and the whole quantity imported, which was extremely small, evidently reached us by the Mediterranean traders. It was not before the beginning of the seventeenth century that any progress seems to have been made in the manufacture of this useful article. The first accredited account we have is in the year 1641, when it is said "the townsmen of Manchester buy cotton-wool in London, that comes from Cyprus and Smyrna, and work the same into fustians, vermilions, and dimities, which they return to London, where they are sold, and from thence, not seldom, are sent into such foreign parts where the first materials may be more easily had for that manufacture." But even as late as 1765, cotton was but little known in England as an article of commerce and manufacture. Of its progress subsequent to that period some account will be found in the body of this work. An idea may be formed of its rapid increase from the following bare statement. The quantity of cotton consumed in Great Britain was,

| | |
|---|---|
| In 1775 | 137,160 lbs. |
| 1790 | 1,757,504 — |
| 1805 | 59,700,000 — |
| 1820 | 120,265 000 — |
| 1831 | 262,700,000 — |
| 1838 | 500,000,000 — |

Thus in the course of fifty years the consumpt of cotton may be said to have risen in this country from one million to 500 million of pounds. Previous to 1793, the cotton used in Britain for the manufacture of the coarser articles was (with the exception of a small quantity from India) wholly grown in our own and the French West India islands; that for the better kind of these goods, was raised in Surinam, or Demerara and Berbice; the wool for the fine goods was grown in Brazil, and that for the very few fine muslins, then manufactured, in the isle of Bourbon.

The advantages of different countries for the cotton manufacture, depend, in a great measure, on their natural condition, long habits, and laws. *England* is superior to most in the abundance and cheapness of iron for machinery; in coal for warming buildings and moving steam power; in suitable climate; ingenuity, experience, and skill of mechanics, from great division of labour, &c.; in greater commerce to find the best markets; capital at low interest, and wages not high; and property secure. But taxes in this country and raw material are high, and living is more expensive than in some other places.

The *United States*, by numerous and cheap water-falls, have a good substitute for steam, and will soon have coal as low for warming; have equal ingenuity, but iron and coal are dearer; raw material and living both lower, and property as secure; wages and capital higher; much less taxation: and a protective tariff.

The subject of *wages* in the different kinds of manufacture, and in different countries, has not been discussed in detail. It may be interesting to many to know that the average wages in 1832, in the United States, of all employed in a cotton factory, were about 14s. 11d. sterling per week; in England, about 10s., sometimes 12s.; in France, only 5s. 6d.; in Switzerland, 4s. 5d.; in Austria, 3s. 9d.; in Saxony, 3s. 6d.; and in India, from 1s. to 2s. per week.

The following Tables will place before the reader many interesting facts regarding the Statistics of this most important branch of Manufacture.

*Statement of Import of Cotton-Wool into Great Britain, from* 1826 to 1836, *inclusive.*

| IMPORT. | 1826. | 1827. | 1828. | 1829. | 1830. | 1831. | 1832. | 1833. | 1834. | 1835. | 1836. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| American, | 395,852 | 646,776 | 444,390 | 463,076 | 618,527 | 608,887 | 628,766 | 654,786 | 733,528 | 763,199 | 764,707 |
| Brazil, | 55,590 | 120,111 | 167,362 | 159,536 | 191,468 | 168,288 | 114,585 | 163,193 | 103,646 | 143,572 | 148,715 |
| East India, | 64,699 | 73,733 | 84,855 | 80,489 | 35,019 | 76,764 | 109,298 | 94,698 | 89,098 | 117,965 | 219,493 |
| Egyptian, &c., | 47,621 | 22,450 | 32,889 | 24,739 | 14,752 | 38,124 | 41,183 | 3,893 | 7,277 | 43,721 | 34,953 |
| West India, | 18,188 | 30,988 | 20,056 | 18,867 | 11,721 | 11,304 | 8,490 | 13,646 | 17,485 | 22,796 | 33,506 |
| TOTAL, ..... Bales, | 581,950 | 894,063 | 749,552 | 746,707 | 871,487 | 903,367 | 902,322 | 930,216 | 951,034 | 1,091,253 | 1,201.374 |
| Do. in lbs.—Millions&10ths, | 171·7 | 270·9 | 219·6 | 222·0 | 261·4 | 280·0 | 287·8 | 304·2 | 320·5 | 361·2 | 410·9 |
| Aver. Wgt. of Import,..lbs. | 295 | 303 | 293 | 297 | 300 | 310 | 319 | 327 | 337 | 331 | 342 |

| *Growth and Consumption of the United States of America.* | | | *Growth of Egypt.* | |
|---|---|---|---|---|
| YEARS. | GROWTH. | CONSUMPTION. | | |
| 1826 — 1827 | 937,000 | 103,483 | 1831 — 1832 | 113,626 |
| 1827 — 1828 | 712,000 | 120,593 | 1832 — 1833 | 79,304 |
| 1828 — 1829 | 857,744 | 118,853 | 1833 — 1834 | 36,085 |
| 1829 — 1830 | 976,845 | 126,512 | 1834 — 1835 | 98,048 |
| 1830 — 1831 | 1,038,848 | 182,142 | 1835 — 1836 | 115,900 |
| 1831 — 1832 | 987,477 | 173,800 | 1836 — 1837 | 175,000 |
| 1832 — 1833 | 1,070,438 | 194,412 | 1837 — 1838 | 80,000 |
| 1833 — 1834 | 1,205,394 | 196,413 | | |
| 1834 — 1835 | 1,254,328 | 216,888 | | |
| 1835 — 1836 | 1,360,725 | 236,733 | | |
| 1836 — 1837 | 1,422,930 | 222,540 | | |
| 1837 — 1838 | 1,801,497 | 246,063 | | |

*Import of Cotton into Great Britain in* 1837 *and* 1838.

| | LIVERPOOL. | | LONDON. | | GLASGOW. | | TOTAL IMPORT INTO G. BRITAIN. | |
|---|---|---|---|---|---|---|---|---|
| | 1837. | 1838. | 1837. | 1838. | 1837. | 1838. | 1837. | 1838. |
| Growth of U. S. from New Orleans and Natchez, | 344,374 | 466,039 | | | | | | |
| Mobile, | 130,773 | 151,352 | | | | | | |
| Florida, | 14,722 | 31,579 | 2,595 | 7,060 | 55,686 | 44,125 | 844,812 | 1,124,800 |
| Savannah, | 129,351 | 184,572 | | | | | | |
| Charleston, | 93,163 | 129,086 | | | | | | |
| Other Ports, | 74,148 | 110,987 | | | | | | |
| Total American, | 786,531 | 1,073,615 | 2,595 | 7,060 | 55,686 | 44,125 | 844,812 | 1,124,800 |
| Brazil and Portugal, | 113,121 | 137,317 | 3,884 | 190 | .... | .... | 117,005 | 137,507 |
| Mediterranean, | 35,859 | 28,315 | 2,001 | 990 | 3,333 | 419 | 41,193 | 29,724 |
| East Indies, | 74,761 | 62,767 | 56,165 | 34,220 | 14,248 | 10,233 | 145,174 | 107.220 |
| Demerara, West Indies, &c., | 25,733 | 26,401 | 1,051 | 1,210 | 1,007 | 1,784 | 27,791 | 29,395 |
| Total Packages, | 1,036,005 | 1,328,415 | 65,696 | 43,670 | 74,274 | 56,561 | 1,175,975 | 1,428,646 |

Increase of Import in 1838, .....252,671 Bales.

*Statement of the Import, Export, and Consumption of Great Britain in* 1838.

| | | | |
|---|---|---|---|
| Stock in Ports, 1st Jan., 1838..... | 259,300 | Export to the Continent and Ireland,....47,100 American, 3,600 Brazil and West India, 51,900 East India, 700 Egyptian, ..... | 103,300 |
| Do. Dealers' and Spinners' hands, England,.....90,000 | | Taken for consumption of England and Scotland from the Ports, ..... | 1,256,600 |
| Scotland, .....10,000 | 100,000 | Deduct increase of Stock in hands of Dealers and Spinners, ..... | 50,000 |
| Import in 1838,..... | 1,428,600 | Consumed in England, 1,095,900, or 21,075 bags ℔ wk. | |
| | | Do. Scotland, 110,700, or 2,129 bags ℔ wk. | 1,206,600 |
| | | Destroyed by Fire, ..... | 7,000 |
| | | Remaining on hand in the Ports, 1st January, 1839,.... | 321,000 |
| | | In Dealers' and Spinners' hands,....England, ..... | 138,000 |
| | | Ditto, ditto, ....Scotland,..... | 12,000 |
| | | | 150,000 |
| | 1,787,900 | | 1,787,900 |

The average Weekly Consumption of Great Britain, in 1838, was estimated at 23,204 bags, consisting of 5,505 Upland, 11,742 Orleans and Alabama, and 317 Sea Island; Total, 17,564 American, 2,460 Brazil, 781 Egyptian, &c., 1,760 East India, 639 West India, &c., being an increase on the Consumption of 1837 of 2,871 Bags ℔ Week.

## *Cotton Yarn and Manufactured Cotton Goods Exported from England in the first Six Months of the Year* 1839.

| | Cotton Yarn. | Cotton Thread. | Calicoes Plain. | Calicoes, Printed and Dyed. | Cambrics and Muslins. | Cords, Velveterns, Velvets, and Jeans. | Cotton and Linen Mixed. | Counterpanes and Quilts. | Damasks and Diapers. | Dimities. | Ginghams and Checks. | Hosiery. | Imitation Shawls. | Lace, &c. | Lawns and Lenos. | Nankeens | Quiltings and Ribs, | Shawls and Handkerchiefs. | Tabes, Bobbins, &c. | Ticks, Checked and Striped. | Unenumerated Cotton Goods. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *lbs.* | *lbs.* | *yds.* | *yds.* | *yds.* | *yds.* | *yds.* | *No.* | *yds.* | *yds.* | *yds.* | *doz.* | *yds.* | *yds.* | *yds.* | *yds.* | *yds.* | *yds.* | *doz.* | *yds.* | £ |
| To Barbary and Morocco . . | .. | .. | 183,840 | 3,042 | .. | .. | .. | 288 | .. | .. | 22 | .. | .. | .. | .. | .. | .. | 20 | .. | .. | .. |
| „ Brazil, and other parts of South America | 7,949 | 152,654 | 23,782,331 | 24,544,587 | 174,312 | 102,586 | 418,155 | 16,909 | .. | .. | 17,736 | 54,308 | .. | 452,183 | 11,880 | 13,234 | 2,191 | 99,170 | 1,029 | .. | 7,641 |
| „ British West Indies . . | 4,900 | 34,502 | 7,217,427 | 8,193,576 | 347,695 | 10,081 | 388,337 | 2,654 | 5,711 | 8,181 | 21,518 | 39,535 | .. | 303,835 | 1,428 | 2,989 | 2,485 | 20,256 | 31,940 | 5,809 | 5,878 |
| „ British North American Colonies | 262,240 | 32,516 | 6,280,468 | 7,236,231 | 102,258 | 67,936 | 3,611 | 10,790 | 2,000 | 1,461 | 3,918 | 17,912 | .. | 548,299 | .. | 1,518 | 700 | 4,935 | 2,305 | 1,390 | 6,227 |
| „ Belgium . . . . . | 17,796 | 20,654 | 319,474 | 1,224,969 | 13,755 | 16,799 | 1,572 | 12 | 30 | 902 | 160 | 1,383 | .. | 6,925,912 | .. | .. | 18,254 | 1,967 | .. | .. | 406 |
| „ Coast of Africa, exclusive of Cape | 3,234 | 5,892 | 1,099,621 | 2,174,088 | 44,046 | 7,709 | .. | 571 | 1,413 | .. | 678,418 | 494 | .. | 726 | .. | 8,358 | 1,530 | 31,300 | 530 | 903 | 93 |
| „ Chili and Peru . . . . | 400 | 127,234 | 11,400,488 | 9,221,517 | 47,249 | .. | 4,200 | 200 | .. | .. | .. | 19,657 | .. | 172,625 | .. | .. | .. | 47,897 | .. | .. | 954 |
| „ Cape of Good Hope . . | 6,192 | 2,526 | 1,140,525 | 1,205,403 | 45,522 | 52,249 | 2,028 | 3,838 | 1,073 | 6,023 | 16,433 | 6,055 | .. | 5,190 | 10,000 | 2,892 | 1,364 | 11,938 | 1,160 | 27,856 | 1,966 |
| „ Colombia . . . . . | 500 | 9,680 | 578 002 | 1,001,789 | 3,240 | 17,300 | 18,170 | 100 | .. | .. | .. | 1,641 | .. | .. | .. | .. | .. | 4,103 | .. | .. | 38 |
| „ Denmark . . . . . | 7,130 | .. | 20,460 | 10,107 | 1,978 | .. | .. | 1,770 | . | .. | .. | .. | .. | 47,378 | .. | .. | .. | 166 | .. | .. | 10 |
| „ Egypt . . . . . | 10.000 | .. | 545,428 | 203,490 | 1,944 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 97 | .. | .. | .. | .. |
| „ France . . . . . | 37,785 | 41,742 | 229,168 | 973,031 | 15.353 | 10,857 | 8,372 | 13 | .. | 1,215 | .. | 780 | .. | 5,227,222 | .. | 1,900 | 4,704 | 1,222 | .. | 76 | 566 |
| „ Foreign West Indies . . | 1,180 | 26,095 | 3,390,007 | 6,431,091 | 28,420 | 7,200 | 49,428 | 2,072 | .. | .. | .. | 6.574 | .. | 292.054 | .. | .. | .. | 10,591 | .. | 2,090 | 414 |
| „ Gibraltar . . . . . | 8,488 | 19,815 | 6,137,230 | 4,536,607 | 29,116 | 16,945 | 118,929 | 40 | 164 | 6,179 | 330 | 3,585 | .. | 63,960 | 746 | 2,080 | 3,848 | 2,100 | 1,135 | .. | 1,832 |
| „ Hause-Towns, Mecklenburg, Oldenburg, &c. | 15,382,159 | 23,021 | 4,799,628 | 10,504,286 | 206,790 | 1,164,569 | .. | .. | .. | .. | 152,597 | 342 | .. | 20,054,437 | .. | .. | 26,045 | 10,078 | 24 | .. | 1,611 |
| „ Hanover . . . . . | 106,409 | .. | 10,470 | 34,036 | 2,840 | 1,080 | .. | .. | .. | .. | 3.600 | .. | .. | .. | .. | .. | .. | 588 | .. | .. | .. |
| „ Holland . . . . . | 7,559,945 | 45,176 | 7,189,835 | 6,520,599 | 139,373 | 107,339 | 500 | 284 | 6,000 | 18,809 | 31,752 | 2,262 | .. | 6,027,989 | .. | .. | 2,924 | 9,231 | .. | .. | 1,114 |
| „ India and China . . . . | 4,802,850 | 18,269 | 37,240,770 | 7,607,992 | 774.646 | 40,128 | 34,692 | 300 | 498 | .. | 71,610 | 3,983 | .. | 97,805 | 12,000 | .. | 5,158 | 13,426 | 200 | 4,180 | 3 882 |
| „ Malta and Ionian Isles . | 89,295 | 4,093 | 788,653 | 555,638 | 24,300 | 6,363 | 1,200 | 117 | .. | 1,080 | 923 | 563 | .. | 19,820 | .. | 8,762 | 87 | 527 | 632 | .. | 68 |
| „ Mauritius and Batavia . | .. | 927 | 433,642 | 467,871 | 46,862 | 1,262 | .. | 10 | .. | .. | .. | 2,793 | .. | 20,342 | 1,620 | .. | .. | 1,310 | 200 | .. | 292 |
| „ Mexico . . . . . | .. | .. | 1,111,334 | 1,043,100 | 23 444 | 16,240 | 813 | .. | .. | .. | 17,280 | 1,212 | .. | .. | .. | .. | 35 | 2,249 | .. | .. | 120 |
| „ New Holland . . . . . | 1,786 | 1,060 | 1,224,188 | 1,516,577 | 184.388 | 55.049 | 16,344 | 11,047 | 1,215 | 5,387 | 15,930 | 18,951 | .. | 231,681 | .. | 1,829 | 4,829 | 5,496 | 5,512 | 51,110 | 3,227 |
| „ Naples and Sicily . . . | 1,353,530 | 33,686 | 1,095,856 | 2,061,855 | 8,080 | 50,060 | .. | 2,750 | .. | .. | .. | 27 | .. | 34,984 | .. | .. | .. | 3,441 | .. | .. | 110 |
| „ Prussia . . . . . | .. | .. | 120 | 340 | 180 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| „ Portugal, Madeira, Azores, and Cape Verd | 340,260 | 87,486 | 5,756,831 | 7,073,556 | 109,282 | 78,572 | 17,207 | 12 | .. | 219 | 11,228 | 5,263 | .. | 367,992 | 2,170 | 2,859 | 8,546 | 11,233 | 1,978 | 10,973 | 1,605 |
| „ Russia . . . . . | 3,738,036 | 2,924 | 500,490 | 1,369 | 102,607 | 17,720 | .. | 295 | .. | .. | 6,144 | 1,087 | .. | 358,680 | .. | .. | 331 | .. | .. | .. | 143 |
| „ Sweden and Norway . . | 416,530 | 8,779 | 42,623 | 127,259 | 12.625 | 6,591 | .. | .. | .. | .. | 119 | 314 | .. | 28,970 | .. | 29 | 22 | 3,332 | 275 | 53 | .. |
| „ Spain . . . . . | 5,820 | 1,098 | 128,102 | 158,686 | 27,826 | 13,496 | 1,680 | 12 | .. | .. | 16,328 | 317 | .. | 144 | .. | 14,000 | 418 | 3,150 | 488 | 1,051 | 122 |
| „ Sardinia, Tuscany, &c. . | 961,925 | 75,289 | 3,623,256 | 5,415,847 | 7,696 | 62,908 | .. | 1,127 | .. | .. | .. | 532 | .. | 165,812 | .. | .. | .. | 7,375 | .. | .. | 724 |
| „ Trieste, Venice, and Austrian Ports | 865,080 | 10,792 | 1,809,352 | 1,781,186 | 5,150 | 3,038 | 328 | 870 | .. | .. | .. | 270 | .. | 118,000 | .. | .. | .. | 8,853 | .. | .. | 50 |
| „ Turkey and Levant . . | 1,186,686 | 30,412 | 15,567,473 | 11,635,542 | 221,577 | 8,889 | 7,875 | 16 | .. | .. | 9,948 | .. | 17,675 | 760 | .. | 700 | 419 | 4,242 | .. | .. | 277 |
| „ United States of America | 61,510 | 480,405 | 6,902,300 | 14,302,099 | 399,985 | 229,374 | 7,480 | 22,770 | .. | .. | 496 | 114,022 | .. | 4,534,214 | .. | .. | 6,922 | 36,272 | 5,100 | 680 | 48,038 |
| Total in first six months, 1839 | 37,239,615 | 1,296,727 | 150,549,392 | 137,767,366 | 3,152,549 | 2.172,340 | 1,100,921 | 78,867 | 18,104 | 49,456 | 1,076,590 | 303.862 | 17,675 | 46,191,014 | 39,844 | 61,150 | 90,909 | 357,365 | 52,508 | 106,171 | 87,108 |
| Ditto ditto 1838 | 53,273,467 | 996,515 | 149,844,349 | 123,682,357 | 3,032,181 | 2,107,988 | 853,646 | 28,595 | 2,553 | 71,905 | 725,890 | 220,051 | 77,426 | 40,729,729 | 16,750 | 66,091 | 91,348 | 369,993 | 19,583 | 72,197 | 49,730 |
| Increase . . | .. | 300,212 | 705,043 | 14,085,009 | 120,368 | 64,352 | 247.275 | 50,272 | 15,551 | .. | 350,700 | 83,811 | .. | 5,371,285 | 23,094 | .. | .. | .. | 2,925 | 33,974 | 37,378 |
| Decrease . . | 16,033,852 | .. | .. | .. | .. | .. | .. | .. | .. | 22,449 | .. | .. | 59,751 | .. | .. | 4,941 | 439 | 12,628 | .. | .. | .. |

*Cotton Wool Imported into Liverpool, London, and Glasgow, from 1st January to 28th June, 1838 and 1839.*

| BAGS. | DESCRIPTION. | 1838. | 1839. | INCREASE. | DECREASE. |
|---|---|---|---|---|---|
| At Liverpool | American | 787,573 | 550,226 | .. | 237,347 |
| — | Brazil | 74,410 | 67,144 | .. | 7,266 |
| — | Egyptian | 20,159 | 15,679 | .. | 4,480 |
| — | East India | 25,518 | 18,515 | .. | 7,003 |
| — | West India | 1,385 | 1,720 | 335 | .. |
| At London | American | 4,994 | 4,383 | .. | 611 |
| — | Brazil | 186 | 2,433 | 2,247 | .. |
| — | Egyptian | 578 | 537 | .. | 41 |
| — | East India | 9,166 | 12,084 | 2,918 | .. |
| — | West India | 453 | 837 | 384 | .. |
| At Glasgow | American | 25,015 | 21,557 | .. | 3,458 |
| — | Brazil | .. | .. | .. | .. |
| — | Egyptian | 320 | 410 | 90 | .. |
| — | East India | 1,431 | 2,094 | 663 | .. |
| — | West India | 1,257 | 594 | .. | 663 |
| | | 952,445 | 698,213 | 6,637 | 260,869 |
| | | 698,213 | | | 6,637 |
| | Bags | 254,232 | . Decrease Imported . | | 254,232 |

RECAPITULATION.
Cotton Wool Imported into Liverpool, London, and Glasgow, from 1st January to 28th June, 1838 and 1839.

NUMBER OF BAGS EXPORTED.

| DESCRIPTION. | 1838. | 1839. | INCREASE. | DECREASE. | 1838. | 1839. |
|---|---|---|---|---|---|---|
| | Bags. | Bags. | Bags. | Bags. | Bags. | Bags. |
| American | 817,582 | 576,166 | .. | 241,416 | 22,537 | 8,269 |
| Brazil | 74,596 | 69,577 | .. | 5,019 | 1,900 | 3,584 |
| Egyptian | 21,057 | 16,626 | .. | 4,431 | .. | .. |
| East India | 36,115 | 32,693 | .. | 3,422 | 16,999 | 7,400 |
| West India | 3,095 | 3,151 | 56 | .. | .. | .. |
| | 952,445 | 698,213 | 56 | 254,288 | 41,436 | 19,253 |
| | 698,213 | | | 56 | 19,253 | |
| Bags | 254,232 | . Decrease Imported . | | 254,232 | 22,183 | Decrease. |

| | Bags. |
|---|---|
| Stock of Cotton in England and Scotland, 1st January, 1839 | 498,929 |
| Imported from 1st January to 28th June | 698,213 |
| Total Number of Bags | 1,197,142 |
| Deduct Exported | 19,253 |
| Supply of Cotton up to 28th June | 1,177,889 |
| Consumption (26 weeks) estimated at 20,000 Bags | 520,000 |
| Stock of Cotton in Great Britain, equal to 32⅔ weeks, if only 20,000 Bags are consumed weekly during the year | 657,889 |

*Weekly Transactions in Cotton at Liverpool.*

| | No. of Bags Imported. | No. of Bags taken by the Trade. | No. of Bags taken by Exporters. | No. of Bags to Speculators. | Total Number Sold. | Weekly Price of Uplands. | | No. of Bags Imported. | No. of Bags taken by the Trade. | No. of Bags taken by Exporters. | No. of Bags to Speculators. | Total Number Sold. | Weekly Price of Uplands. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | D. ½d. | D. | | | | | | D. ½d. D. |
| Jan. 4 | .. | 4,590 | .. | 16,000 | 20,590 | 7⅜ to | 9 | April 5 | 6,291 | 7,660 | 78 | .. | 7,660 | 8 - 9⅛ |
| — 11 | 20,753 | 9,230 | 280 | 26,500 | 35,730 | 7½ - | 9 | — 12 | 31,940 | 13,560 | 210 | 6,000 | 19,350 | 8½ - 9¾ |
| — 18 | 16,251 | 12,280 | 250 | 5,700 | 18,230 | 7¾ - | 9⅝ | — 19 | 39,609 | 9,804 | 216 | 750 | 20,770 | 8⅜ - 10 |
| — 25 | 4,299 | 20,400 | 70 | 16,800 | 37,200 | 7 - | 9 | — 26 | 12,779 | 6,360 | 440 | .. | 7,800 | 8⅜ - 9⅛ |
| Feb. 1 | 4,477 | 13,246 | 300 | 5,700 | 19,240 | 6½ - | 9½ | May 3 | 13,828 | 8,670 | 210 | .. | 8,880 | 8 - 9⅞ |
| — 8 | 20,865 | 13,550 | 260 | 6,950 | 20,761 | 7⅜ - | 9 | — 10 | 17,190 | 8,390 | 200 | 100 | 8,690 | 8 - 9⅞ |
| — 15 | 43,815 | 11,003 | 427 | 8,000 | 19,430 | 7½ - | 9 | — 17 | 23,693 | 7,615 | 345 | .. | 7,960 | 7⅝ - 9 |
| — 22 | 13,775 | 12,835 | 225 | 1,000 | 14,060 | 7⅜ - | 9 | — 24 | 25,145 | 9,190 | 250 | .. | 9,440 | 7⅞ - 9 |
| March 1 | 28,356 | 19,718 | 322 | 4,200 | 24,240 | 7⅜ - | 9 | — 31 | 25,912 | 19,350 | 500 | .. | 19,850 | 7½ - 10 |
| — 8 | 577 | 48,315 | 85 | 40,500 | 88,900 | 7 - | 9 | June 7 | 14,682 | 20,880 | 1,650 | 500 | 23,030 | 7½ - 9⅝ |
| — 15 | 12,404 | 16,915 | 215 | 43,600 | 60,730 | 8 - | 9½ | — 14 | 114,280 | 20,880 | 400 | 300 | 21,500 | 7⅝ - 10 |
| — 22 | 45,211 | 29,118 | 352 | 20,350 | 59,820 | 8½ - | 10 | — 21 | 13,645 | 10,225 | 925 | .. | 11,150 | 7¾ - 9½ |
| — 29 | 13,138 | 13,548 | 382 | 4,500 | 18,430 | 8½ - | 10 | — 28 | 91,915 | 10,640 | 150 | .. | 10,790 | 7 - 9½ |

*Particulars of Sales of Cotton at Liverpool.*

| BAGS AND BALES. | *For the Week ending June 28th*, 1839. | Price ¼d. per lb. D. | D. |
|---|---|---|---|
| 2,490 | Uplands | 7 to | 9½ |
| 3,550 | Orleans | 7⅛ - | 9½ |
| 10 | Ditto | 10½ - | 0 |
| 40 | Sea Islands | 21½ - | 30 |
| | Stained ditto | 0 - | 0 |
| 430 | Maranham | 8½ - | 9¼ |
| 470 | Bahia and Macaio | 8½ - | 9½ |
| 1,330 | Alabama, Mobile, and Tennessee | 7⅜ - | 9½ |
| | Ditto | 0 - | 0 |
| 520 | Egyptian | 12½ - | 15 |
| | Peruvian | 0 - | 0 |
| 30 | Demerara, &c. | 8 - | 12 |
| 180 | Common West India | 5½ - | 5⅞ |
| 70 | Laguira | 9¼ - | 0 |
| 940 | Surat and Madras | 4⅜ - | 6⅜ |
| 100 | Bengal | 4½ - | 0 |
| 630 | Pernambuco, Paraiba, &c. | 9¼ - | 10½ |
| 10,790 | Total. | | |

| | BAGS. |
|---|---|
| Total Sales during the Week | 10,790 |
| On Speculation | |
| For Exportation | 150 |
| Total to the Trade | 10,640 |

| BAGS AND BALES. | *Same period last Year.* | Price ¼d. per lb. D. | D. |
|---|---|---|---|
| 4,900 | Uplands | 5½ to | 7¾ |
| 4,630 | Orleans | 5⅜ - | 9 |
| | Ditto | 0 - | 0 |
| 140 | Sea Islands | 20 - | 32 |
| 30 | Stained ditto | 7 - | 10 |
| 130 | Maranham | 7½ - | 9½ |
| 229 | Bahia and Macaio | 8⅜ - | 8¾ |
| 1,750 | Alabama, Mobile, and Tennessee, | 5⅜ - | 7½ |
| 50 | Ditto | 8½ - | 0 |
| 400 | Egyptian | 9½ - | 12 |
| 20 | Peruvian | 8¼ - | 9 |
| | Demerara, &c. | 0 - | 0 |
| | Common West India | 0 - | 0 |
| 30 | Laguira | 8½ - | 0 |
| 1,020 | Surat | 4½ - | 5½ |
| 140 | Madras | 4⅜ - | 5½ |
| 50 | Bengal | 3½ - | 0 |
| 610 | Pernambuco, Paraiba, &c. | 8¾ - | 9½ |
| 14,120 | Total. | | |

| | BAGS. |
|---|---|
| Total Sales during the Week | 14,120 |
| On Speculation | 300 |
| For Exportation | 450 |
| | 750 |
| Total to the Trade | 13,370 |

*The Prices of Cotton in Britain and the United States since 1789; the Capital and Number of Persons employed in growing it; and the Value of the whole Crop.*

| Year. | Prices per lb. | | Capital employed in connection with growing. | | | Persons employed in growing, and dependent. | | Value of whole crop in | |
|---|---|---|---|---|---|---|---|---|---|
| | Britain. | United States. | U. States. | Egypt | Brazil | United States. | Elsewhere. | United States. | Elsewhere. |
| | Pence. | Cents. | Dols. | Dols. | Dols. | | | Dolls. | Dolls. |
| | | | Mills. | Mills. | Mills. | Mills. | Mills. | Mills. | Mills. |
| 1789 | 12 to 22 | .. | | | | | | | |
| 1790 | 12 to 21 | 14½ | | | | | | | |
| 1791 | 13 to 30 | 28 | 3½ | . | 33 | 1/20 | 1 | 1/8 | 40½ |
| 1792 | 20 to 30 | 29 | | | | | | | |
| 1793 | 13 to 23 | 32 | | | | | | | |
| 1794 | 12 to 18 | 33 | | | | | | | |
| 1795 | 15 to 27 | 36½ | | | | | | | |
| 1796 | 12 to 29 | 36 | | | | | | | |
| 1797 | 13 to 37 | 34 | | | | | | | |
| 1798 | 22 to 45 | 39 | | | | | | | |
| 1799 | 17 to 60 | 44 | | | | | | | |
| 1800 | 16 to 36 | 23 | | | | | | | |
| 1801 | 17 to 38 | 44 | 60 | .. | 50 | 1/10 | 1/8 | 8 | 39½ |
| 1802 | 12 to 38 | 19 | | | | | | | |
| 1803 | 8 to 15 | 19 | | | | | | | |
| 1804 | 10 to 18 | 20 | | | | | | | |
| 1805 | 14 to 19 | 23 | | | | | | | |
| 1806 | 12 to 15 | 22 | | | | | | | |
| 1807 | 10 to 14 | 21½ | | | | | | | |
| 1808 | 9 to 30 | 19 | | | | | | | |
| 1809 | 10 to 18 | 16 | | | | | | | |
| 1810 | 10 to 19 | 16 | | | | | | | |
| 1811 | 7 to 14 | 15½ | 134 | 1/10 | 58 | 1/4 | 1/8 | 12½ | 37 |
| 1812 | 11 to 14 | 10½ | | | | | | | |
| 1813 | 18 to 26 | 12 | | | | | | | |
| 1814 | 29 aver. | 15 | | | | | | | |
| 1815 | 20½ .. | 21 | | | | | | | |
| 1816 | 18½ .. | 29½ | | | | | | | |
| 1817 | 20 .. | 26½ | | | | | | | |
| 1818 | 20 .. | 34 | | | | | | | |
| 1819 | 13½ .. | 24 | | | | | | | |
| 1820 | 11½ .. | 17 | | | | | | | |
| 1821 | 9½ .. | 16 | 300 | 8½ | 63 | 1/8 | 1/8 | 29½ | 37 |
| 1822 | 8½ .. | 16½ | | | | | | | |
| 1823 | 8½ .. | 10 & 12 | | | | | | | |
| 1824 | 8½ .. | 15 | | | | | | | |
| 1825 | 11½ .. | 21 | | | | | | | |
| 1826 | 6½ .. | 11 | | | | | | | |
| 1827 | 6½ .. | 9½ | | | | | | | |
| 1828 | 6½ .. | 10½ | | | | | | | |
| 1829 | 5½ .. | 10 | | | | | | | |
| 1830 | 6½ .. | 10 | | | | | | | |
| 1831 | 5½ .. | 9½ | 650 | 30 | 58 | 1/2 | 4/5 | 33½ | 29½ |
| 1832 | 6½ .. | 10 | | | | | | | |
| 1833 | 7½ .. | 11 | | | | | | | |
| 1834 | 8½ .. | 13 | .. | .. | .. | .. | .. | 76 | 36½ |
| 1835 | 12½ .. | 18½ | 800 | 31 | 50 | 1 | 4/5 to 1 | | |

The *prices* given as to the United States are those at the places of exportation, and the average during the year, including all kinds of cotton; but the *sea-island* cotton is worth usually 250 per cent. more than the other kinds; and the finest species of it often brings four times as much as the inferior qualities.—The *prices* as to Britain are given (generally as they are in Liverpool) in pence sterling, and may be converted into cents by doubling the number of pence,—that is, computing the pound sterling at 4 dollars, 80 cents.

*Quantity of Cotton manufactured and used in several Countries.*

| | Quantity manufactured and consumed. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Years. | England. | do | United States. | China & India. | South America and Mexico, including Brazil. | Germany. | Turkey and Africa. | Spain. | Prussia. | Elsewhere. | |
| | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | lbs. | |
| | Mills | Mills. | Mills. | Mills. | Mills. | Mills. | Mills. | Mills. | Mills. | Mills. | |
| 1780 | 13½ | 13½ | 13½ | | | | | | | | |
| 1784 | 11½ | | | | | | | | | | |
| 1789 | | | | | | | | | | | |
| 1790 | 30 | .. | 5 | | | | | | | | |
| 1791 | 28 | 10 | 5½ | 285 | 50 | 15 | 52 | 2 | 2 | 80 | |
| 1792 | 33½ | | | | | | | | | | |
| 1793 | 17½ | | | | | | | | | | |
| 1794 | 23 | | | | | | | | | | |
| 1795 | 25 | | | | | | | | | | |
| 1796 | 31 | | | | | | | | | | |
| 1797 | 22½ | | | | | | | | | | |
| 1798 | 31 | 18 | | | | | | | | | |
| 1799 | 42 | 10½ | | | | | | | | | |
| 1800 | 51 | 6½ | 8[1/10] | | | | | | | | |
| 1801 | 53½ | 11 | 9 | 280 | 45 | 22 | 50 | 8 | 5 | 50 | |
| 1802 | 56½ | 15 1/10 | | | | | | | | | |
| 1803 | 51½ | 15½ | .. | .. | .. | .. | .. | 3 | | | |
| 1804 | 66½ | 17½ | | | | | | | | | |
| 1805 | 58½ | 18½ | 11 [1/8] | | | | | | | | |
| 1806 | 57½ | 21½ | | | | | | | | | |
| 1807 | 72½ | | | | | | | | | | |
| 1808 | 41 | | | | | | | | | | |
| 1809 | 67½ | | | | | | | | | | |
| 1810 | 125 | 23 | 16 [3½] | | | | | | | | |
| 1811 | 139½ | 23 | 17 | 270 | 48 | 25 | 48 | 5 | 8 | 50 | |
| 1812 | 59½ | 21 | | | | | | | | | |
| 1813 | | | | | | | | | | | |
| 1814 | 52½ | | | | | | | | | | |
| 1815 | 92 | .. | 31½ | | | | | | | | |
| 1818 | 66 | | | | | | | | | | |
| 1817 | 116½ | 30 or 26 | | | | | | | | | |
| 1818 | 172 | | | | | | | | | | |
| 1819 | 132½ | | | | | | | | | | |
| 1820 | 142 | 44 | | | | | | | | | |
| 1821 | 114 | 47 | 50 | 260 | 42 | 30 | 45 | 8 | 7 | 45 | |
| 1822 | 120½ | 61 | | | | | | | | | |
| 1823 | 177 | 50 | | | | | | | | | |
| 1824 | 131 | 75 | .. | .. | .. | .. | .. | .. | 7 7/10 | | |
| 1825 | 206 | 80 | | | | | | | | | |
| 1826 | 150½ | 96 | | | | | | | | | |
| 1827 | 250½ | 87 | | | | | | | | | |
| 1828 | 208½ | 61 | 60 | | | | | | | | |
| 1829 | 190½ | 71½ | | | | | | | | | |
| 1830 | 255 | 87½ | | | | | | | | | |
| 1831 | 237 | 65½ | 77½ | | | | | | | | |
| 1832 | 260 | 78 | | | | | | | | | |
| 1833 | 284½ | 87 | 80 to 85 | 242 | 35 | 36 | 42 | 10 | 20 | 40 | |
| 1834 | 297 | 80 | | | | | | | | | |
| 1835 | 320½ | .. | 100 | | | | | | | | |

This Table shows, not the consumption of *manufactured* cotton, but the consumption and manufacture of cotton from its *raw* state. It includes the quantity of raw cotton raised in any country and not exported, with the additional quantity imported and not re-exported.

*Number of Persons and of Spindles employed in Cotton Manufactures, at different periods, in several Countries.*

| Years. | Persons employed, connected with factories, chiefly, number of | | | Spindles employed in factories, number of | | | |
|---|---|---|---|---|---|---|---|
| | In England. | U. States. | France | In England. | U. States. | France. | Switzerland. |
| 1758 | 20,000? | | | | | | |
| 1760 | 16,000? | | | | | | |
| 1770 | 30,000? | | | | | | |
| 1784 | 60,000? | | | | | | |
| 1787 | 182,000 to 260,000? | | | | | | |
| 1789 | | | | 49,500 | | | |
| 1790 | . | . | . | . | 70 | | |
| 1791 | | | | | | | |
| 1792 | | | | | | | |
| 1793 | | | | | | | |
| 1794 | | | | | | | |
| 1795 | | | | | | | |
| 1796 | | | | | | | |
| 1797 | | | | | | | |
| 1798 | | | | | | | |
| 1799 | | | | | | | |
| 1800 | | | | | | | |
| 1801 | | | | | | | |
| 1802 | | | | | | | |
| 1803 | | | | | | | |
| 1804 | | | | | | | |
| 1805 | . | . | . | . | 4,500 | | |
| 1806 | . | . | 120,000 | . | . | 81,000 | |
| 1807 | . | . | . | . | 8,000 | | |
| 1808 | | | | | | | |
| 1809 | 800,000? | . | . | . | 31,000 | | |
| 1810 | . | . | . | . | 67,000 | | |
| 1811 | . | . | . | Millions. 5 | 80,000 | Millions. 1 | |
| 1812 | . | . | . | 4½? | . | | |
| 1813 | | | | | | | |
| 1814 | . | . | . | . | 122,616 | | |
| 1815 | . | 100,000 | . | . | 130,000 | | |
| 1816 | . | . | . | 6½ | | | |
| 1817 | . | . | . | 6½ | | | |
| 1818 | . | . | . | . | . | 1 3/10 | |
| 1819 | | | | | | | |
| 1820 | . | . | . | . | 220,000 | | |
| 1821 | . | . | . | . | 230,000 | | |
| 1822 | 427,000 | | | | | | |
| 1823 | | | | | | | |
| 1824 | . | . | . | 6? | . | . | 250,200 |
| 1825 | . | . | . | ? | 600,000 | | |
| 1826 | | | | | | | |
| 1827 | 705,100 to 1,000,000 | | | | | | |
| 1828 | | | | | Millions. 1½ to 1 | | |
| 1829 | . | . | . | . | 7 | | |
| 1830 | . | 179,000 to 175,146 | . | . | 1½ | | |
| 1831 | . | 200,000 | 200,000 | 7½ to 8½ | | | |
| 1832 | 1,200,000 | . | . | . | . | 3½ | |
| 1833 | 1,500,000 | | | | | | |
| 1834 | . | . | 600,000 | 9½ | | | |
| 1835 | . | . | . | . | 1½ | | |

In some places in England, the change of late years from the hand to the power loom, has caused some distress, and the employment of a larger proportion of females and children. About nine-fifth now employed there are men, one-third women, and the rest children.—The number of hand looms in England, in 1820 and 1830, was about the same, viz. 240,000. The number of power-looms in 1820, 14,000; in 1830, 55,500; in 1835, 109,626. There was very little spinning by machinery in France till after 1785. Spinning by machinery has been introduced into India; but most of the cotton manufactured there is by women, and in households.

COVERDALE, Miles; bishop of Exeter in the time of Edward VI., and noted as the first who introduced to his countrymen a complete translation of the Bible, was born in Yorkshire in 1487. His early life corresponded little with his subsequent career; for he not only studied in a monastery at Cambridge, but became a monk of the order of St Augustine. It is probable, however, that under Dr Barnes, his prior, who afterwards suffered martyrdom for the Protestant faith, Coverdale acquired a large portion of that scriptural learning which, at the proper time, he brought to bear with full effect on the great question of the Reformation. In 1514, he was ordained at Norwich; and the university of Tubingen, in Suabia, having conferred upon him the degree of doctor of divinity, he, with some other divines of Cambridge, avowed his departure from the Romish church, and his conversion to Protestantism. This important step appears to have been taken about the year 1530, when there was a strong effort made, especially at the two universities, to restore the church of England to its original purity.

In Germany he met with William Tindal, who had led the way among the English translators of the scriptures,—having translated from the original Greek, and published the New Testament in 1526. With Coverdale's assistance he also translated and edited the five books of Moses. Tindal, whose life, however useful to others, seems to have been one of "labour and sorrow," was imprisoned through the influence of King Henry VIII., and by virtue of a decree made in the assembly at Augsburg, brought to execution in 1536.

The joint exertions of these two excellent men having been thus interrupted by the violent death of one of them, Coverdale followed up, with increased energy, the object, in the pursuit of which his friend had fallen a sacrifice. He set himself to the great work of publishing *the whole of the sacred canon in English*, and declaring himself as ready to serve the interests of religion "in one translation as in another," the one which he presented to his countrymen, was, according to his own title, made from the Latin and German. Coverdale, however, called his version a "special" translation, because it was different from the former English translation. "Its noble simplicity, perspicuity, and purity of style," says the Rev. Thomas Hartwell Horne, "are truly astonishing. It is divided into six tomes or parts, adorned with wood-cuts, and furnished with scripture references in the margin. The last page has these words,—"Prynted in the year of our Lorde M.D.XXXV., and fynished the fourth dayc of October." It is in folio, and, from the appearance of the types, is generally considered to have been printed at Zürich, in the printing-office of Christopher Froschover. The following is the title-page of this extremely rare and curious volume:—

> 'Biblia. The Bible, that is, the holy Scripture of the Olde and New Testament, faithfully and truly translated out of the Douche and Latyn into Englische, M.D.XXXV.'"

Of this Bible there was another edition in large 4to., 1550, which was republished, with a new title, 1553; and these, according to Lewis, were all the editions of it which were ever put forth.

Coverdale, during the unsettled state of religion in England, spent much of his time in labours abroad; and we find him in 1538, involved in a troublesome affair connected with the object which was so dear to his heart. Grafton, the famous printer, had been allowed by Francis I., king of France, at the request of our Henry, to print a Bible at Paris, on account of the superior skill of the workmen there, and the goodness and cheapness of the paper. But, notwithstanding the royal license, the church of Rome interfered. The inquisitors issued their order, and the French printers, their English employers, and the corrector of the press, who was Miles Coverdale himself, were summoned before the inquisition. They condemned the whole impression of 2500 copies of the Bible to the flames. Some copies were, however, secretly sold to a haberdasher to wrap his goods in, and were thus saved from the general destruction. Not only were these copies, but the presses and types, as well as the printers, afterwards brought to London; a most valuable importation, which enabled Grafton and Whitchurch to print, in 1539 and 1540, under Coverdale's direction, what is called "Cranmer's," or "the Great Bible." Of Cranmer's Bible we have a specimen in that translation of the Psalms of David which is adopted in the common prayer-books.

In 1551, king Edward VI. made Coverdale bishop of Exeter. On this office he entered very poor. In his diocese he endeavoured to promote religion by frequently preaching in the churches at Exeter; and he became eminent for his hospitality, which he exercised to the extent of his means; for his constant kindness to the poor; and, more than all, for his unaffected humility of deportment and character. On the accession of queen Mary, he was driven from his see, and thrown into prison: his life, however, was spared, owing to his connection by marriage with the chaplain of the king of Denmark, who interceded for him; but, after two years' confinement, he was, by way of special favour, allowed to go into exile. At Geneva, whither he retired, he united with some other English refugees in producing, in 1560, the "Geneva Bible," the notes to which savour of the opinions of Calvin; and when recalled to England in the happier days of Elizabeth, Coverdale was found, in his utter departure from popery, to have adopted views approved by the German reformers, but not sanctioned by the church of England; which prevented him from resuming his episcopal functions, and, indeed, for some time, from engaging in any ministerial duty. At length, Dr Grindal, bishop of London, gave him the living of St Magnus the martyr, near London bridge, the first-fruits of which, however, he was too poor to be enabled to pay. Indeed, from the time of his ejection from the sec of Exeter, his life was a continual struggle against poverty. The queen excused him the payment of the first-fruits; but, notwithstanding, he soon gave up his living, though he continued to officiate in the church. He died in February, 1568, aged eighty-one, and was buried in the church of St Bartholomew, by the royal exchange, as appears by the register.

COW-TREE; a remarkable tree in South America, from which a substance similar to milk is procured. Although mentioned by older writers, it was first properly described by Humboldt and Bonpland. It is supposed by Humboldt to be peculiar to the Cordillera of the coast of Venezuela particularly from Barbula to the lake of Maracaybo, but it would appear to be much more extensively distributed through South America, at least three trees possessing very nearly similar properties, and known to the inhabitants by the names of lyria,

popa, and sandè, exist in the vast forests of Chocò and Popayan. In the valley of Caucagua, it is known by the name of *arbol de leche*, or the milk-tree; and there the inhabitants, as Humboldt acquaints us, "profess to recognize, from the thickness and colour of the foliage, the trunks that yield the most juice,—as the herdsman distinguishes, from external signs, a good milch cow." At the farm of Barbula, this vegetable fountain is more aptly termed the *palo de vaca*, or cow-tree. It rises, as Humboldt informs us, like the broad-leaved star-apple (*chrysophyllum cainito*), to a height of from thirty to forty feet, and is furnished with round branches, which, while young, are angular, and clothed with a fine heavy down. The leaves are alternate, petiolate, oblong, rounded at either extremity, and terminated with a very short point, or acumen,—very entire at their edges,—their veins reticulated, and the primary ones projecting on the surface;—they are tough or leathery, very smooth, nine or ten inches in length, and hardly four in breadth: the petioles, or footstalks of the leaves, are thick, furrowed, smooth, eight or nine inches long, and unfurnished with stipules at their base. The flowers, unfortunately, have never yet been seen by any botanist, and hence nothing is known with certainty as to the genus to which it belongs: the fruit resembles the drupe of a walnut, is fleshy, globular, and green, containing one or two one-seeded nuts. The trunk, on being wounded, yields its bland, agreeable, and nutritious fluid in the greatest profusion, especially at the rising of the sun. "It is not here," says Humboldt, "the solemn shades of forests,—the majestic course of rivers,—the mountains wrapped in eternal frost,—that excite our emotion. A few drops of vegetable juice recall to our minds all the powerfulness and the fecundity of nature. On the barren flank of a rock grows a tree with coriaceous and dry leaves. Its large woody roots can scarcely penetrate into the stone. For several months of the year, not a single shower moistens its foliage. Its branches appear dead and dried; but when the trunk is pierced, there flows from it a sweet and nourishing milk. It is at the rising of the sun that this vegetable fountain is most abundant. The blacks and natives are then seen hastening from all quarters, furnished with large bowls to receive the milk, which grows yellow, and thickens at its surface. Some employ their bowls under the tree itself, others carry the juice home to their children. We drank considerable quantities of it in the evening before we went to bed, and very early in the morning, without feeling the least injurious effect. The ropiness of this milk alone renders it a little disagreeable. The negroes and the free people, who work in the plantations, drink it, dipping into it their bread of maize or cassava. The *major domo* of the farm told us, that the negroes grow sensibly fatter during the season when the *palo de vaca* furnishes them with most milk."

This juice, exposed to the air, presents at its surface, perhaps in consequence of the absorption of the atmospheric oxygen, membranes of a strongly animalized substance, yellowish, stringy, and resembling a cheesy substance; these membranes, separated from the rest of the more aqueous liquid, are elastic, almost like *caoutchouc;* but they undergo, in time, the same phenomena of putrefaction as gelatine. The people call the coagulum that separates by the contact of the air, cheese; this coagulum grows sour in the space of five or six days.

CRAIGMILLAR CASTLE; a castle situated about three miles south of Edinburgh, the ruins of which still remain. It stands on elevated ground, and commands an extensive and beautiful prospect on every side. Its age is not known; but the rampart, as appears by the inscription upon the gate, was built in 1427.

The front of the building is towards the north: over one of the doors is carved a press and a cask, in allusion, it is believed, to the name of *Preston*. It was surrounded by a thick rampart, thirty feet high, with parapets and turrets, of which a considerable part remains. There is an inner court of considerable extent; and there is also a very large outer court; on the west side of which there was erected a presbyterian meeting-house, in consequence of the indulgence granted to that persuasion by James VII. of Scotland.

This castle was for some time the residence of James V., when he left Edinburgh on account of the plague. It was taken, and part of it demolished, by the English, in 1543, when Henry VIII. invaded Scotland, in order to compel the young queen of Scots to marry his son prince Edward. Mary queen of Scots resided here for some time after her return from France, in 1561. Her French servants took up their abode in a neighbouring village, which is yet known by the name of Little France; and a room in the castle is still called *queen Mary's drawing-room*.

The castle and surrounding estate belonged, so far back as the year 1374, to the family of Preston. They now belong to the descendants of Sir Thomas Gilmour, the great Scottish lawyer, who acquired the property about the time of the Revolution.

CREOSOTE; a remarkable substance, discovered about 1831, by Reichenbach, in the oil of tar. It is obtained by a tedious process, principally consisting in repeated solution in potash, separation by acid, and distillation. It is an oily fluid, sp. gr. 1·037; colourless, refracting light powerfully, having a sweetish burning taste, and a strong smell of peat smoke, or smoked meat. It has many useful properties. 1. Flesh steeped in a solution of it, one part to a hundred of water, for twenty-four or forty-eight hours, is rendered imputrescible, and acquires a pleasant smoked flavour. This explains the use of smoke, tar, and pyroligneous acid as antiseptics; for all these bodies owe their virtue to the creosote they contain. As the Egyptians are known to have used the oil of tar in embalming, Reichenbach concludes, with much probability, that creosote is the essential mummifying substance; and that the fragrant gums were only used to disguise the smell. From this powerful antiseptic property is derived the name, which signifies "preserver of flesh." Creosote is now beginning to be employed as the best means of smoking flesh and fish. 2. Creosote has been used in surgery and medicine with great success. It is an excellent application to ulcers, even the most malignant, to most cutaneous eruptions, and to burns and wounds. It should be applied in substance at first, till a healthy action is produced, after which it may be used diluted. It produces intense but very short-lived smarting. It also acts as a very energetic and safe styptic. Internally, it has been found of use in stomachic disorders, especially in obstinate vomiting. The dose should be carefully regulated; one to two drops in a cup of water being an averge dose. A larger quantity might produce poisonous effects. To the cutane-

ons affections of horses, dogs, and sheep, it has been successfully applied in the form of ointment; and it is by far the most effectual cure yet discovered for the toothache arising from caries. When carefully applied, in substance, to the hollow, taking care not to swallow it, it rarely fails in giving instantaneous relief. It is the active ingredient in several recent nostrums, as is proved by the smell. 3. It has been used in the construction of hollow lenses for telescopes by professor Marx of Brunswick, from its high dispersive power. On the whole, no substance has been lately produced, which seems likely to be available for so many useful purposes. Dr Cormack has published a small volume on creosote, which may he consulted for details.

CROWLAND. See *Croyland*.

CROYDON, a market-town in the county of Surrey, nine and a half miles south from London. It enjoys a considerable trade, particularly in corn. The manor of Croydon appears to have been attached to the archbishopric of Canterbury at a very early period. The palace, or manor-house, was long the occasional abode of the archbishops, particularly during the reign of queen Elizabeth, who seems to have delighted to visit this place. The queen held a council here on the 30th of April, 1567; during which year she twice visited archbishop Parker, who then held the see, and was eminently distinguished for his virtues and his learning. In July, 1573, the queen and her whole court remained here seven days; passing the time with "jousts" and rejoicings. After the accession of archbishop Whitgift to the see, he was frequently honoured with visits from his sovereign, the last of which that we can find recorded was in 1600. When James I., king of Scotland, was a prisoner in England, he was placed at this palace, under the custody of archbishop Arundel. Having fallen into decay, the palace was, in 1780, sold for £2520, and fitted up as a calico-printing establishment, while Addington Park, about three miles distant, was purchased for £25,000, as a more suitable residence for the archbishop.

The parish of Croydon is one of the most extensive in the kingdom, being thirty-six miles in circumference, and comprising within its limits more than 10,000 acres and eight hamlets. Population in 1841, 16,712.

CROYLAND, OR CROWLAND; an ancient town in Lincolnshire, fifty-one miles S. S. E. from Lincoln, situated on the rivers Welland and Nene, and a large drain called Cat water, over which there is a singular old bridge. This is supposed to have been built about the year 860; it consists of three semi-pointed arches, meeting together in the centre, the abutments standing on the angles of an equilateral triangle. It is placed at the junction of three roads, which thus terminate at the crown of the bridge. The steep ascents are made into steps, paved with small stones set edgewise; at the foot of one segment there is the ruined statue of some Saxon monarch, by some supposed to be Ethelbert.

In olden times there was nothing but impassable marshes around the town. These have now been drained and converted into luxuriant meadows and corn fields. In this process wind-mills have been successfuly employed, some of them lifting forty tons of water per minute. Farming and grazing occupy the greater part of the inhabitants. They have also an extensive trade in poultry and especially in wild-ducks, which are taken in nets to the number of thousands at a time. For the privilege of fowling and fishing in these ponds, the abbot of Crowland claimed £300 per annum from the inhabitants, which is still exacted by the crown. The market has long ago been transferred to Thorney in the county of Cambridge; but the fair—commencing on the festival of St Bartholomew—is held annually and continues for twelve days. Population of Croyland in 1841, 2973.

The *abbey of Croyland*, the ruins of which still remain, was founded by Ethelhald, king of Mercia, about the year 817, in honour of one of his nobles, who, from his religious devotion, was called St Guthlac. Ethelhald contributed £300 in silver to its erection and granted it a £100 a-year, for ten years, besides the permission to its residents of constructing a town in its neighbourhood for their use. For several succeeding reigns it enjoyed the favour of the ruling monarch, particularly of Egbert and Withlaff. And thus did it continue to prosper, till the arrival of the ruthless Danes, who, on visiting the county of Lincoln, attacked this famous abbey, destroyed it, and barbarously murdered its inmates. This happened about a hundred and fifty years after its foundation, and it remained thus in ruins and despoiled, till the reign of king Edred, in 948, when that monarch rebuilt it; however, in 1091, it was again destroyed by fire, and in 1112 it was again rebuilt; and, further, scarcely thirty years had elapsed, before it met with a similar fate, and was burnt to the ground; but in 1170 it rose from its ashes, and met with no particular violence or injury for nearly 400 years, when Croyland Abbey, with the monastic institutions in general, fell a sacrifice to the avarice and the vengeance of Henry VIII.

CULLUM, SIR JOHN, sixth baronet, the historian of Hawsted in Suffolk, was born on the 20th June, 1733. Having commenced his studies in the grammar school of St Edmundsbury, he entered the university of Cambridge, where he took the degrees of bachelor and master of arts, and obtained the bachelor's prize for the best dissertation in Latin prose. He was admitted a fellow of Catherine hall on the 7th Dec. 1759; was instituted in 1762 to the rectory of Hawsted, on the presentation of his father, and in Dec. 1774 to the living of Great Thurlow, on the presentation of his brother-in-law, Henry Vernon, Esq. He was a fellow of the royal society and of the society of antiquaries. He died on the 9th Oct. 1785, in the fifty-second year of his age.

The history of Hawstead was published originally in the *Bibliotheca Topographica Britannica;* and a second edition, in a separate form, made its appearance in 1813, with corrections by the author, and notes by his brother, Sir Thomas Gery Cullum. In a postscript by John Nichols, F.S.A. to the advertisement prefixed to this second edition, is a brief memoir of the deceased, with an account of his chief literary communications.

*Sir Thomas Gery Cullum*, his successor, partook of the literary character of his brother, and was a Fellow of the royal and Linnæan societies, and of the society of antiquaries. Natural history was the chief object of his studies, and botany his favourite pursuit, in which he found an ardent associate in his friend the late president of the Linnæan society, Sir James Edward Smith, who dedicated to him his "English Flora." Sir Thomas Cullum was born 30th Nov. 1741, and was entered

of the Charterhouse school in 1752. He became a pupil of the celebrated surgeons, William and John Hunter; was admitted a member of the late corporation of surgeons on the 7th May, 1778, and, by acceptance of the charter of 1800, was enrolled a member of the college. He was a capital burgess of St Edmund's Bury, and deputy lieutenant for the county of Suffolk; and held the office of Bath king of arms from the year 1771 to 1800, when he resigned it in favour of his second son, John Palmer Cullum, whom he survived. Dying on the 8th Sept. 1831, Sir Thomas Cullum lies buried with his ancestors in Hawsted church.

CURFEW; the word *Curfew* is derived from the Norman word, *carrefou*, or *couvrefeu*, and is now considered by us to mean the signal for extinguishing fires. Pasquier says it is derived from *carfou*, or *garefou*, as being intended to advertise the people to secure themselves from the robbers and revellers of the night. One of the laws of William the Conqueror ordered all his subjects to extinguish their fires and light, and retire to rest, at eight o'clock, at which hour the Curfew was appointed to be rung, but the regulation existed in the monasteries long before his time; and although it was not, perhaps, obligatory on the inhabitants of the adjoining villages, yet was highly conducive to the general safety, when the cottages were composed entirely of timber. Henry, in his *History of Great Britain*, says there is sufficient evidence that the same custom prevailed in most parts of Europe at this period, and was intended as a precaution against fires, which were then very frequent and very fatal, when so many houses were built of wood; and Peshall, in his *History of the City of Oxford*, affirms that the custom of ringing the bell at Carfax, every night at eight o'clock (called the Curfew bell, or cover-fire bell), was by order of *king Alfred*, the restorer of our university, who ordained that all the inhabitants of Oxford should, at the ringing of that bell, cover up their fires and go to bed; which custom is observed to this day: and the bell as constantly rings at eight as Great Tom tolls at nine.

The custom of ringing the eight o'clock, or Curfew, bell, is still kept up, or was till lately, in many towns in England, though the obligation it was intended to enforce, viz., the extinguishing the fires, &c., and the pains and penalties consequent upon the transgression of the law, were abolished in the year 1110, by Henry I.

The obligation to extinguish fires and lights at a certain hour was imposed upon his subjects by David I., king of Scotland, in his *Leges Burgorum*.

CURLING; a game played with stones upon the ice, at one time peculiar to Scotland, but now practised in some districts of England and North America. It is somewhat similar in its principles to the game of bowls upon a green.

Two parties, each perhaps composed of about a dozen persons, play against each other. Each person is provided with a flattish round granite stone, resembling a small cheese in figure, polished on the bottom, and having a handle stuck into the upper side. The stones are hurled along from one end to the other of a long cleared space of smooth ice, called a *rink*. Skill in playing not only depends in hurling the stone truly to the goal at either end, but in dislodging the stones of the antagonist party. As one of each side plays alternately, the game is full of vicissitudes; for half a dozen of the best-laid *shots* may be in an instant scattered over the field of ice by the concussion of a single stone which has been sent on its errand with a well directed arm.

In frosty weather, throughout the south and west of Scotland, but little, if at all, in the north, the game of curling is eagerly followed by all classes of the people, from the highest dignitary of the land to the humblest artizan. Parish contends against parish, county against county, club against club, in universal mirthful rivalry. Ordinary matches are called *spiels*: matches betwixt neighbouring parishes or towns are called *bonspiels*, and a not uncommon stake is a load or two of oatmeal to the poor of the parish that gains the victory. A more usual stake, at least in smaller contests, is a dinner, appropriate to the season, of boiled salt beef and greens, given by the losers to the winners. So keenly is the game pursued, that, in many places where there are no natural brooks, artificial ponds are formed at the approach of winter, for the purpose of being frozen.* At Edinburgh, where there are neither rivers nor ponds, the inhabitants resort for the amusement of curling, as well as skating, to the adjacent beautiful small lake at Duddingstone, lying at the south-eastern base of Arthur's seat. Here a most animated scene is exhibited during the period that the waters of the lake are frozen. Numbers of rinks are cleared, at which may be seen playing together persons in almost every shade of society—professors of the university, clergymen, private gentlemen, merchants, tradesmen, and artizans—all meeting on a common level, and engaged in the same spirit-stirring pursuit.

Curling is of unknown antiquity in Scotland. When the general assembly at Glasgow in 1638 deposed the episcopal church government, one of the charges brought against the bishop of Orkney was that he had played at this game on the sabbath day. The charge, whether true or false, proves that

* The merit of first forming artificial curling rinks belongs to Mr John Carnie of Largs, who more than ten years ago succeeded in making a rink at Largs weeks before ice would bear in any other quarter. In forming an artificial curling rink, the first thing to be done is to select a suitable piece of ground, levelling and freeing it from grass and weeds; the bottom must then be lined with clay, to prevent any material absorption of water. A little lime mixed with the clay has the effect of killing and checking the mining operations of worms; and in the absence of lime, a small quantity of coal-tar spread on the surface will serve the very same purpose. The walls, so to speak, of the rink, and which need not be above five inches in height, are formed in the same manner as the bottom, with this exception, that the clay is sloped and covered with a thick layer of turf, to prevent the sides and ends from being broken. The rink may be from forty to sixty yards long by seven yards broad. Little more than a hundred carts of clay completed the pond formed at Largs, and this was the principal item of expense. To produce ice to the thickness of a quarter of an inch, on such an area as is described above, about six hundred gallons of water will suffice; but where haste is required, the fourth part of the quantity will be found sufficient, and may be applied by two men in the course of an hour, who sprinkle the surface with the roses of watering pans. The water freezes as fast as it falls, and many coatings of ice will be formed before the men have completed their task, and within the time just specified.

After two years' experience, Mr Carnie found an objection arising from weeds and worms; and to obviate this, he employed workmen to stick a number of small stones into the clay: over these a roller was drawn repeatedly, and the mass, when thus consolidated, became nearly as firm and hard as a road thoroughly macadamised. Not contented with this, he spread a mixture of lime and sand over the clay to the depth of an inch and a half or more, levelling the surface with the roller as before; and if a barrel or two of Roman cement were superadded, or even used as a substitute for the sand, the inventor is of opinion that the pond would remain perfect for many years without requiring the slightest repair. But for ordinary purposes, a mass of well-levelled clay, sprinkled with lime, with sides and ends a few inches high is quite sufficient; and though it may suffer from worms and the vicissitudes of weather, a very little care will put every thing to rights on the recurrence of winter.

curling was known in the country at least two hundred years ago, however earlier.

"The time is not distant," says Mr M'Diarmid, in his Sketches of Nature, "when the game of curling was little known out of Scotland, or even within it, benorth the Forth. But the taste for this manly sport has increased greatly of late years; and in various parts of England, as well as of America, the broom and the channel-stone are put in requisition with the same regularity that winter comes round. In the course of last year, several hundred pairs of stones were exported to Canada; and it may be worthy of remark, that the best material for the manufacture of these is found at Ailsa Craig—one of the most remarkable rocks in the world—and particularly on the side of it facing Girvan. To fashion and balance the stones properly requires a very good workman, and the few that are known to excel in the art have great reason to be satisfied with their earnings.

"In the whole range of rural sports," continues the same writer, "I know nothing more exhilarating than a *spiel* on the ice, where the players are numerous and well matched—the stakes a dinner of beef and greens—and the forfeit the honour of rival parishes. Whether we mingle with the eager throng, or perambulate the banks of the frozen lake, on the principle that 'distance lends enchantment to the view,' the scene abounds with points of interest, that might well afford scope for the pencil of a Wilkie, or the pen of a Scott. First, we have the icy arena itself, scooped at the bottom of some quiet vale, fringed with reeds, from which the wild duck rises whirring on the wing, and skirted with alders, whose beautifully feathered and fantastic tops seem even more engaging than when nursed into foliage by the beams of May. All around is blank and dreary—the snow-flake freezes as fast as it falls—the sun seems level with the horizon's verge—the hills make the spectator cold to look at them—and every thing, in one word, conspires to complete the picture of a winter's day. But the courage of men bent on the favourite amusement of curling is not easily damped by the inclemency of the elements; on the contrary, their spirits seem to mount as the thermometer falls, and nothing pleases them more than a feeding storm, and, along with that, the prospect of a long lease of "their roaring play." Arrived at the scene of action, all is bustle and animation, till the stones have been distributed, assorted, claimed—rinks measured, tramps fastened, tees fixed and the order of battle completely arranged; and as these preliminaries are speedily settled, to it the parties set with all the anxiety of those who contend for a much higher prize. Lots, perhaps, are cast for the first shot, and the greatest novice invited to deliver the first stone; and should his arm lack the proper pith, that instant a dozen of brooms are raised to help the laggard over the *hogg score*. A second, a third, a fourth succeeds, and so on, till the line stretches a tolerable length, though not by any means to the 'crack of doom;' and each man is warned by his respective friends to plant, if possible, an excellent guard—dislodge this stone and cover that—open up one port and close up another—play soft or strong, outside or inside, as the occasion may require—and steer as closely by the signal broom, as the mariner, when warned by similar devices, threads his watery way through sand-banks and shallows."

As curling is one of the most healthy and exhilarating of sports, and as it can never be followed to any injurious extent, seeing that its practice is necessarily limited to a season of the year when country labour is mostly suspended, we shall here lay before the reader an elaborate description of the manner in which the game is performed. The knowledge of a pastime so admirably fitted for warming and enlivening the dreary hours of a winter day deserve to be extensively spread. For the description which we here quote we are indebted to the "Penny Magazine."

"The first business is to select a portion of ice as pure, level, and hard as possible: this ought not to be less than forty-six yards in length and six in breadth, but fifty-two long by eight broad is preferable. This is termed a *rink* or *lade*. Along the middle, and about equally distant from each end, two points are selected, called the *tee*: the distance between these is usually from thirty-six to forty-two yards, but is determined by the quality of ice, average strength of the players, and excellence of the stones used; there ought however to be about five yards between each tee and the extremity of the rink. One or two circles, called *rings*, of different diameters, are commonly described round each tee, to facilitate the measuring the distance of the stone from the centre, and during the game to assist the eye in forming a more correct idea of what stone is nearest it, as actual measuring is not allowed till every stone has been played from the opposite end. Upon the tee a small conspicuous but easily moved mark, as a cone of wood two or three inches high, is usually placed; and this indeed is the real *tee*, the immovable centre or point below it being the tosee: sometimes instead of a mark, a player places the end of his broom over the tosee, and removes it the moment the stone is delivered. About one-fifth of the whole distance between the tees, and between them, a line called the hog-score or collier-score is drawn across the rink at each end. Each player is provided with a broom, with which to sweep the rink clear, and two curling stones; these last vary in size and weight, according to the strength of the player, some weighing as much as fifty lbs. imperial, or even more, others only twenty-eight or thirty lbs.; they are of the hardest and toughest granite or whinstone; they are always made circular, with a flattish sole, or under part, which is highly polished; the sides are either straight, when the stone is the section of a cylinder, or circular, when it may be compared to a very flat barrel; the usual height of a barrelled stone is about one-half of the greatest diameter, and the top or sole about 2½ or 3 inches less than the greatest diameter. About 10 inches in diameter, with a sole and top 7 or 7½, and height 5 or 5¼, yields a well shaped stone of from 35 to 40 lbs. These stones have an iron or wooden handle, either open at one end or closed, and fixed into the upper surface. The players, of whom from eight to sixteen can join in the game at the same rink, are now divided into two parties, each of which chooses a captain, called a *director* or *skipper*, who has the whole control of his side of the game, and may arrange his own players, including himself, in what order he pleases; the same routine is preserved throughout the whole game, and each party plays alternately.

"The directors, if not otherwise previously arranged, draw lots which party shall play first. The first player now stands at one of the tees, in such a position that the stone must pass over the tee;

various modes are adopted to give a secure footing, but the best is a plate of iron about 3½ or four feet long and nine or ten inches broad, punched or frosted on both sides, so that it not only yields secure footing to the player, but cannot move from its position; and moreover if it be properly placed at first, none of the players can stand in an improper position. The first player now delivers his stone by lifting it, and by a swing of his arm sliding it along the ice towards the farther tee: his object is merely to cross the *score* farthest off; if it goes farther, and approach the tee too closely, the opposite party's first stone may be immediately made to strike it to a great distance, and the stone be thus in a measure lost; on the other hand, if it does not cross the score, it is termed a *hog*, or *collier*, and is removed off the ice; and other players have to follow him on the same side till the ice be filled, that is, until the first party have one stone across the score, after which the adverse party plays. The evil of the first player's stone being a hog, or collier, is apparent at the conclusion of the *end*,* for then the opposite party has two or more stones to deliver consecutively, and may thus play any game they choose without fear of its being spoiled by the other side. After a stone has passed the score, the only penalty attached to a collier or hog, is to be removed off the ice. The ice being filled, the first of the second party plays; his duty is not to touch the opposite party's stone unless it be very near the tee, but to pass by its side and *draw*, that is, to take up an advantageous position near the tee. The first skipper's directions must now be given with care, and he will have to consider whether it be preferable to strike up the first stone nearer the tee and lie guard to it, or to strike out the opposite party's, which we shall suppose already near the tee, or to draw on the other side: the directions must depend on the exact positions of the stones, and of the known good or bad play of the person whose turn it is. The general object of the game is to place as many stones of the same party as near the tee as possible, and to drive out or exclude those of the other; but whether this he done before or only towards the conclusion of the *end*, will depend on the plan of game followed. After all the stones have been played, those of the one party which are nearer than the nearest one of the other, count each stone one, and thus concludes the first end. The party which gains that end now fills the ice for the next *end*, and so on, each party adding together all their winnings until they amount to seven, thirteen, twenty-one, or thirty-one, as happens to be agreed on before playing, to constitute game: sometimes, instead of any particular number as game, the parties play for a certain number of hours, the greatest winners being victors.

"The director or skipper is permitted to order each of his own side what to do, or to attempt to do, and the player must do his utmost to obey the directions. Like the general of an army, the director must be master of the scientific as well as the practical part of the game: he must occasionally lay stratagems, or discover and try to obviate those laid by the other director. He must be cool, understand the temper of his troops, consult the biases in the ice, the effect of the wind, the excellence of the stone to be delivered, and whether sweeping he necessary; and he must especially study the qualifications of the players; for if an indifferent player he ordered to take a difficult shot, he may miss it, and do at the same time much injury to his own party, so that it would have been better had he not made the attempt. He must have also disposed the players judiciously: thus the leader, or first of a side, ought to be a sure player who will lay his stone in the proper place, and above all, not be a *collier*: the second ought also to be good, in case by some accident (for accidents will occur) the first player has not crossed the score; for if the second stone were also a collier, the end must be lost by several shots, unless the opponents are wretched players. Again, the two last players ought to he first-rate, to drive out the opposite winners or to break up the guards, and for this purpose they ought to have strength and weight of stone, as well as certainty of aim; for when the game is crowded, a stroke on a wrong stone may present the other party with several points. The worst players ought to be placed in the middle.

Every player, we have said, is obliged to have a broom in his hand. Previous to the director's orders to play being given, either party may sweep the whole rink clean: when a stone has been played, its own side may sweep the ice before it, between the farther score and tee; after it has passed the tee, his adversaries may ply their brooms. Much may be done by judicious sweeping; a stone may thus, although it would otherwise settle immediately beyond the score, be made to glide up to near the tee; and on the other hand, if the ice be swept too clearly before it, it may pass the tee, when the other party's brooms coming into play may cause it to glide on so far as to be lost. Although therefore the director has the whole charge of the sweeping department, still much depends on the player's sweeping.

There are various points in the game, such as drawing, striking, posting (or passing through between two stones without touching them), butting, guarding, wicking, &c.: *inwicking* is when the player has to make his stone strike at an angle on the inner side of another so as to repel it farther from the tee, and alter the course of his own towards it; *outwicking* is the reverse of this, and consists in striking the outer side of a friend's stone so as to project it near to the tee: wicking, or hrittelling, as it is also called, is unquestionably the most beautiful part of the game, and requires most science.

To prevent disputes between parties, there are a number of laws, hut as the same have not received the sanction of *all* curling clubs, some regulations are generally agreed on before playing, particularly if it be a set game, called a spiel, when between those of the same club or parish, and bonspiel when between different clubs or districts."

CUVIER, Baron Frederick, an eminent naturalist, brother of the illustrious Baron George Cuvier, of whom a memoir is given in the hody of the work, was born at Montbeliard, in 1773. He was called to Paris hy his hrother, and became keeper of the menagerie at the Jardin des Plantes in 1804, a place which enabled him to make some valuable observations on the economy and physiology of animals. These are published in the *Annales du Muséum*, and, with other valuable works on natural history, led to his election into the academy of sciences, to the inspector-generalship of the university, to the legion of honour, to the royal so-

* *The end* is the term used for all the players having played from one end to the other.

ciety of London, and lastly to the chair of comparative physiology at the Jardin des Plantes. He was also a contributor to several scientific journals, and the principal labourer in the *Histoire des Mammiferes*, published in conjunction with M. Geoffroy St Hilaire. His death took place in 1838.

# D

DAGUERROTYPE, the name applied to a recent invention of M. Daguerre of Paris, by which he fixes upon a metallic plate the lights and shadows of a landscape or figure solely by the action of the solar light. The interest excited in this invention has been increased by the publication of a series of experiments made by our countryman Mr Talbot, directed towards the same object, and producing nearly similar results. So far back as the year 1800, the attention of Sir Humphrey Davy and Mr Wedgwood was directed to the subject by the extraordinary effect produced by light upon the nitrate of silver, which led them to hope that the purposes of the artist might be assisted by the susceptibility of the metallic oxide. The first experiment was made by Mr Wedgwood for the purpose of copying paintings upon glass, and was eminently successful; the copy obtained possessing all the figures of the original, in their native shades and colours: it was also in a high degree permanent, so long as it was preserved from the action of the light. The same gentleman discovered that the shadow of an opaque object thrown upon the paper was copied in outline with great correctness; but though both these celebrated chemists were constant and persevering in their endeavours to render the drawing permanent, they were entirely unsuccessful; the lighter shades darkening by exposure and thus obliterating the impression. Their failure in this important object was published with their experiments in the philosophical transactions, and both having given up the attempt, their discoveries have since remained unimproved. But in the meanwhile M. Daguerre, it appears, struck by some hints he had received from a friend, has steadily pursued his experiments for the last twenty years, and having at length attained his object, has declared his discoveries, and claimed the invention as his own.

A polished metallic plate is the substance made use of, and being placed within the apparatus is in a few minutes removed and finished by a slight mechanical operation. The sketch thus produced is in appearance something similar to aquatint, but greatly superior in delicacy; and such is the extraordinary precision of the detail that the most powerful microscope serves but to display the perfection of the copy. The first efforts of the inventor were directed towards architectural subjects, and a view of the Louvre and Notre Dame are among the most admired of these engravings. In foliage he is less successful, the constant motion in the leaves rendering his landscape confused and unmeaning: and the same objection necessarily applies to all moving objects, which can never be properly delineated without the aid of memory. But in the execution of any stationary subject, buildings, statues, or the bodies of animals, the facsimile is perfect; and the value of the invention may therefore be easily conceived.

Several eminent artists have examined the designs, and were equally delighted with the precision and delicacy of the representation. Among the sketches exhibited by the projector was a marble bas relief and a plaster imitation; the first glance was sufficient to detect the difference between these two; and in three views of a monument taken in the morning, noon, and evening, the spectators easily distinguished the hours at which they were executed, by the difference of the light, though in the first and last instances, the sun was at an equal altitude. But perhaps the anatomist or zoologist will derive the greatest advantages from the discovery, the form of the animal being as easily studied from the drawing as from the original, and the most powerful microscopes not having hitherto detected the smallest deficiency in the details. Nor is the invention devoid of interest to the astronomer, for the light of the moon is sufficient to produce the usual results, requiring only additional time for its operations. The following extract from "Le Commerce" is sufficient to substantiate its value in this respect:—"The experiments on the light of Sirius have confirmed the testimony of natural philosophy, and abundantly proved that the stars are bodies of the same nature as the sun; at the request of M. Biot, M. Daguerre has submitted his apparatus to the influence of the light of the moon, and has succeeded in fixing the image of that luminary. We observed that the image had a trail of light something like the tail of a comet, and we ascribed it to the movement of the body during the operation, which is of much longer duration than that by the light of the sun."

In the spring of 1834 Mr Talbot began a series of experiments, with the hope of turning to useful account the singular susceptibility evinced by the nitrate of silver when exposed to the rays of a powerful light; but not being acquainted with the researches of former chemists on the subject, he commenced with the same disadvantages which had baffled the skill and perseverance of Sir Humphrey Davy. The plan he at first proposed was, to receive a well-defined shadow upon a sheet of paper covered with a solution of nitrate of silver, by which means the part shaded would remain white, while the surrounding portion was blackened by exposure to the light. But he was well aware that the sketch thus obtained would require to be protected from the rays of the sun, and examined only by an artificial light. He had carried these inquiries to some extent, and became possessed of several curious results before he learnt the steps which others had taken to attain the same object·

and the decided terms in which Sir Humphrey Davy expresses his failure might perhaps have discouraged his less experienced follower, had he not fortunately already conquered the difficulty which had destroyed the hopes of the former chemists.

"In the course of my experiments directed to that end," says Mr Talbot, "I have been astonished at the variety of effects which I have found produced by a very limited number of different processes when combined in various ways; and also at the length of time which sometimes elapses before the full effect of these manifests itself with certainty. For I have found that images formed in this manner, which have appeared in good preservation at the end of twelve months from their formation, have nevertheless somewhat altered during the second year." He was induced from this circumstance to watch more closely the progress of this change, fearing that in process of time all his pictures might be found to deteriorate; this however was not the case, and several have withstood the action of the light for more than five years.

The images obtained by Talbot's process are themselves white, but the ground is differently and agreeably coloured; and by slightly varying the proportions, and some trifling details of manipulation, any of the following colours were readily obtained: — light blue, yellow, pink, brown, black, and a dark green nearly approaching to black.

The first objects to which the process was applied were leaves and flowers, which it rendered with extraordinary fidelity, representing even the veins and minute hairs with which they were covered, and which were frequently imperceptible without the aid of a microscope. Mr Talbot goes on to mention that the following considerations led him to conceive the possibility of discovering a preservative process. Nitrate of silver, which has become darkened by exposure to the light, is no longer the same chemical substance as before; therefore, if chemical re-agents be applied to a picture obtained in the manner already mentioned, the darkened parts will be acted upon in a different manner from those which retain their original colour, and after such action they will probably be no longer affected by the rays of the sun, or, at all events, will have no tendency to assimilate by such exposure; and if they remain dissimilar, the picture will continue distinct, and the great difficulty be overcome.

The first trials of the inventor to destroy the susceptibility of the metallic oxide were entirely abortive; but he at length succeeded to an extent equal to his most sanguine expectations. The paper employed by Mr Talbot is superfine writing paper: this is dipped into a weak solution of common salt, and dried with a towel till the salt is evenly distributed over the surface: a solution of nitrate of silver is then laid over one side of the paper, and the whole is dried by the heat of the fire. It is however necessary to ascertain by experiment the exact degree of strength requisite in both the ingredients, for if the salt predominates, the sensibility of the paper gradually diminishes, in proportion to this excess, till the effect almost entirely disappears.

In endeavouring to remedy this evil, Mr Talbot discovered that a renewed application of the nitrate not only obviated the difficulty, but rendered the preparation more sensitive than ever; and by a repetition of the same process the mutability of the paper will increase to such a degree, as to darken of itself without exposure to the light. This shows that the attempt has been carried too far, and the object of the experimentalist must be to approach, without attaining this condition. Having prepared the paper and taken the sketch, the next object is to render it permanent, by destroying the susceptibility of the ingredients for this purpose. Mr Talbot tried ammonia and several other re-agents with little success, till the iodide of potassium, greatly diluted, gave the desired result: this liquid, when applied to the drawing, produces an iodide of silver, a substance insensible to the action of light. This is the only method of preserving the picture in its original tints, but it requires considerable nicety, and an easier mode is sufficient for ordinary purposes. It consists in immersing the picture in a strong solution of salt, wiping off the superfluous moisture, and drying it by the heat of the fire; on exposure to the sun, the white parts become of a pale lilac, which is permanent and immovable. Numerous experiments have shown the inventor that the depths of these tints depends on the strength of the solution of salt; he also mentions that those prepared by iodine become a bright yellow under the influence of heat, and regain their original colour on cooling. Without the application of one of these preservatives the image will disappear by the action of the sun; but if inclosed in a portfolio, will be in no danger of alteration: this, Mr Talbot remarks, will render it extremely convenient to the traveller, who may take a copy of any object he desires, and apply the preservative at his leisure. In this respect Mr Talbot's system has the advantage over that of M. Daguerre, since it would be scarcely possible for a traveller to burden himself with a number of metallic plates, which in the latter process are indispensable.

Since the publication of the above discoveries, numerous candidates have appeared in the field, all claiming the palm of originality, while philosophers of every grade and country have eagerly pursued the investigation of the subject. The first we shall notice is M. Niepce, who claims priority even over M. Daguerre; and the account he publishes, if correct, will undoubtedly determine the question in his favour. A letter from M. Bauer is the principal evidence for M. Niepce, who, it appears, mentioned his discovery to this gentleman in the year 1827, while on a visit at Kew, and by the advice of his friend he drew up a memoir on the subject, and caused it to be forwarded to the royal society. This document was however returned, it being contrary to the rules of the association to receive accounts of scientific discoveries unless they detailed the process employed. M. Niepce shortly afterwards returned to France, having presented to his friend several specimens of the newly discovered art, which are still in the possession of M. Bauer. The pictures taken are of two kinds, copies from engravings, and copies from nature; the best of the former is in the possession of Mr Cussel, and is considered nearly equal to those of M. Daguerre, with suitable allowance for twelve years' exposure; the specimen taken from nature is however by no means so successful, and is considered inferior to the earliest attempts of his countryman. M. Bauer distinctly asserts that he possessed copies of engravings produced solely by the action of light, which were capable of being *multiplied* in the

same manner as an ordinary copper-plate; if this be the case, the greatest secret still remains unknown, even to M. Daguerre himself. It is much to be regretted that M. Niepce did not at once publish his extraordinary discovery, with a full detail of the process employed, as he would then have retained the indisputable right to the merit of the invention.

We must leave this point, and now proceed to notice the claims of Mr Havell, in conjunction with Mr Wellmore, who are said to have introduced an important addition to the process pursued by Mr Talbot, a full description of which is contained in a letter to the editor of the Literary Gazette. The first attempt of Mr Havell was directed towards an etching, by Rembrandt, of an old man reading, and the result was a reversed facsimile—a negro face surmounted by locks of silver; the disappointed artist discovered that a second transfer entirely destroyed the spirit of the picture. To remedy this evil he had recourse to a new process, by which this defect was indeed removed, but the great merit of the art, namely, its self-acting power, was lost. A thin plate of glass was laid on the subject to be copied, upon which the high lights were painted with a mixture of white lead and copal varnish, the proportion of varnish being increased for the darker shading of the picture. The next day Mr Havell removed the white ground with the point of a penknife, to represent the dark etched lines of the original, and a sheet of prepared paper having been placed behind the glass, and thus exposed to the light, a tolerable impression was produced; the half tints had however absorbed too much of the violet ray, an imperfection which was remedied by painting the parts over with black on the other side of the glass; if allowed to remain too long exposed to the sun's rays the middle tints became too dark and destroyed the effect of the sketch; about ten minutes in a powerful sun was considered sufficient. Another method employed by Mr Havell was to spread a ground composed of white lead, sugar of lead, and copal varnish, over a plate of glass, and having transferred a pencil drawing in the usual manner, to work it out with the etching point till it bore the appearance of a spirited ink drawing, or in the hands of an engraver a highly finished engraving. The above process Mr Havell made public under the impression that it had been hitherto overlooked, but Mr Talbot hearing that he was about to apply for a patent, laid claim to the improvement as his own, and not only pointed out some parts of his former memorial where it was distinctly mentioned, but also produced several drawings made precisely in the manner described; he also laid before the royal society a new method of preparing the sensitive paper, which consists in immersing it in a solution of nitrate of silver, and, after washing it with bromite of potassium, the nitrate of silver is again applied, the preparation being dried by the fire between each operation; the paper thus treated is extremely sensitive, changing with the feeblest daylight, first to a bluish green, then to olive green, and finally to black.

A letter to Mr Talbot from his friend M. Biot has also been published, and contains many interesting experiments. After commenting upon the value of the discovery, he continues—"The interest with which I viewed this circumstance engaged me to make some experiments upon your preparation, in order to vary its application to the researches in which I am occupied. First—I wished to know whether the change of colour was in any degree influenced by the paper itself; I therefore spread the substance on a piece of white unglazed porcelain instead of paper, taking care to operate by night, and drying it each time at the fire, as you say: I thus obtained a dry solid coating upon the porcelain, which I shut up in a dark place until the morning. In the morning I took it out and found it of a pale sulphur yellow colour; I then presented it to the daylight at an open window looking north, the weather was then very cloudy, yet no sooner had I so presented it than already it was turned green, and soon afterwards it became black. I then wished to know whether the preparation would succeed equally well if not dried at the fire; I therefore, in a darkened room, mixed the aqueous solution of bromide of potassium with that of nitrate of silver, a precipitate fell, which I spread on a porcelain plate, and left it to dry in the dark; the next day I wrapped it in several folds of paper, and brought it into another room to show it to a friend; but having taken off the covers in a dark corner of the room in order to exhibit the original colour, pale lemon yellow, instantly we saw its tint become green, and I had hardly time to present it to a window opening to the north before its colour had passed to dark olive green, after which it almost immediately became nearly black. I do not think it possible to find any substance more sensitive to light."

Meanwhile, the invention of M. Daguerre has been purchased by the French government; a yearly pension of 6000 francs having been settled on M. Daguerre, and another of 4000 francs on M. Niepce, the son of the gentleman (deceased) by whose experiments the invention was originally suggested. On the 19th Aug. 1839, M. Arago divulged the secret to a very crowded meeting of the Academie des Sciences. M. Daguerre's process is as follows:

A plate of copper thinly coated with silver is washed with a solution of nitric acid, for the purpose of cleansing its surface, and especially to remove the minute traces of copper, which the layer of silver may contain. This washing must be done with the greatest care, attention, and regularity. M. Daguerre has observed, that better results are obtained from copper plated with silver, than from pure silver; whence it may be surmised, that electricity may be concerned in the action.

After this preliminary preparation, the metallic plate is exposed, in a well-closed box, to the action of the vapour of iodine, with certain precautions. A small quantity of iodine is placed at the bottom of the box, with a thin gauze between it and the plate, to sift the vapour, as it were, and to diffuse it equally. It is also necessary to surround the plate with a small metallic frame, to prevent the vapour of iodine from condensing in larger quantities round the margin than in the centre; the whole success of the operation depending on the perfect uniformity of the layer of ioduret of silver thus formed. The exact time to withdraw the sheet of plated copper from the vapour, is indicated by the plate assuming a yellow colour. M. Dumas, who has endeavoured to ascertain the thickness of this deposit, states that it cannot be more than the millionth part of a *millimètre*. The plate thus prepared is placed in the dark chamber of the camera obscura, and preserved with great care from the faintest action of light. It is, in fact, so sensitive,

that exposure for a tenth of a second is more than sufficient to make an impression on it.

At the bottom of the dark chamber, which M. Daguerre has reduced to small dimensions, is a plate of ground glass, which advances or recedes until the image of the object to be represented is perfectly clear and distinct. When this is gained, the prepared plate is substituted for the ground glass, and receives the impression of the object. The effect is produced in a very short time. When the metallic plate is withdrawn, the impression is hardly to be seen, the action of a second vapour being necessary to bring it out distinctly; the vapour of mercury is employed for this purpose. It is remarkable, that the metallic plate, to be properly acted upon by the mercurial vapour, must be placed at a certain angle. To this end, it is enclosed in a third box, at the bottom of which is placed a small dish filled with mercury. If the picture is to be viewed in a vertical position, as is usually the case with engravings, it must receive the vapour of mercury at an angle of about 45°. If, on the contrary, it is to be viewed at that angle, the plate must be arranged in the box in a horizontal position. The volatilization of the mercury must be assisted by a temperature of 60° of Reaumur (or 167° of Fahrenheit.) After these three operations, for the completion of the process, the plate must be plunged into a solution of hypo-sulphite of soda. This solution acts most strongly on the parts which have been uninfluenced by light; the reverse of the mercurial vapour, which attacks exclusively that portion which has been acted on by the rays of light. From this it might perhaps be imagined, that the lights are formed by the amalgamation of the silver with mercury, and the shadows by the sulphuret of silver formed by the hypo-sulphite. M. Arago, however, formally declared the positive inability of the combined wisdom of physical, chemical, and optical science, to offer any theory of these delicate and complicated operations, which might be even tolerably rational and satisfactory. The picture now produced is washed in distilled water, to give it that stability which is necessary to its bearing exposure to light without undergoing any further change. The art of fixing the colours of objects has not hitherto been accomplished; and another important desideratum is, the means of rendering the picture unalterable by friction. The substance of the pictures executed by the Daguerrotype is, in fact, so little solid—is so slightly deposited on the surface of the metallic plate, that the least friction destroys it, like a drawing in chalk: and at present, it is necessary to cover it with glass.

DAHLIA, (*a.*) The Dahlia, which now forms so prominent a feature in the flower-garden, was named in honour of Andrew Dahl, a botanist of Sweden. Wildenow objected to the term, under an erroneous impression that it had previously been appropriated to another genus; and adopted the name Georgina; but he has not been followed by subsequent writers. Others objected to it from its similarity to Dalea, a genus already established after our countryman Dale. The name Dahlia is now, however, so well confirmed, that it may bid defiance to the caprice of modern botanical name-changers. It is, notwithstanding, very desirable that attention be paid to the proper pronunciation of the word. The *a* should have the open sound, as in father; it will then be clearly distinguishable from the older name Dalea. The genus is now principally divided into two species, *superflua* and *frustranea*, in allusion to the florets of the rays of the former abounding in seed, whilst those of the latter species are barren. Other specific distinctions were first adopted, but they all proved unstable; and from the proneness of the Dahlia to sport into such numerous varieties, it may be doubted whether the present distinction will prove permanent.

These splendid plants are natives of Mexico, and though noticed by the Spaniards about the middle of the seventeenth century, did not attract much attention till they had flowered at Madrid, in 1790, when Cavanilles described them in the first volume of his Icones, published in the following year. In 1802, he sent plants to Paris, where they were successfully cultivated by Monsieur Thouin, who, shortly afterwards, published coloured figures and a description of them. The first introduction of the Dahlia into England was, according to the *Hortus Kewensis*, by the marchioness of Bute, in 1789, but the plants, it may be presumed, were soon lost. In 1802 and 1803, others were sent from Paris; and in 1804, seeds from Madrid; yet, for several years, they were scarcely heard of amongst us. Their habits being unknown, their increase was slow; whilst, on the continent, innumerable and splendid varieties were produced; so that, after the peace, in 1814, they were poured upon us in all the variety of their present tints; exciting the astonishment of every beholder, and the joy of those who could number such beauties amongst their own collections. Since that time they have been rapidly increased and improved; and England can now boast of varieties as superb as any in the world.

Early sown seeds produce plants that will flower in the succeeding autumn. The more certainly if forced on a hot-bed. Roots keep very well in sand, in a dry cellar. In dividing them, the old stems may be slit, and a portion must be retained to each plant. Plant old roots in the first week of April; or pot them, force in a hot-bed, and turn into the borders when three or four inches high. A few may be retained in large pots; they will be less luxuriant, and flower earlier. Train one stem only from each root, and pinch off the lower-side shoots. The superfluous shoots from old roots, when taken off, may be planted in the shade, under a hand-glass, and will readily grow, as will cuttings of the older stems. Or cuttings of fine varieties may be grafted on the tubers of common ones, merely by splicing them together, tying, and enclosing them in a little clay, before they are potted in mould: they should then be put in a hot-bed and shaded. A gravelly soil checks their luxuriance and produces most flowers.

DALLAS, Sir George, Bart., was descended from an ancient family long established at Cantra in Scotland, and was born in London, on the 6th of April, 1758. He was educated principally at Geneva, under the care of Mr Chauvet, a distinguished minister of the Swiss Church, together with his brother, the late right honourable Sir Robert Dallas, who afterwards became a leading ornament of the English bar, and lord chief justice of the court of common pleas. At the age of eighteen, Sir George (then Mr) Dallas sailed for Bengal, as a writer in the service of the East India Company; and, having given proof of the most promising abilities, was, soon after his arrival in India, appointed to a station of some importance at

Ramgur. He had previously acquired considerable celebrity by a sprightly and ingenious poem, descriptive of the adventures of an Indian voyage, and of the first impressions of a youthful mind on finding itself surrounded by objects so remote from European associations. This work was afterwards published at Calcutta, under the title of "The India Guide," and was dedicated to the celebrated Anstie, whose popular poem, "The Bath Guide," had suggested to the author the idea of a similar undertaking. In the circles of Calcutta it excited a peculiar interest, as well from the circumstance of its being the first publication which ever issued from the press of India, as from the vivid pictures it presented of social life and manners in the east.

From the post to which he was originally appointed, Mr Dallas was soon promoted, at the express desire of Mr Hastings, to the more important charge of superintendent of the collections at Raageshay. A selection so honourable to its object was amply justified by the ability and discretion with which he performed the duties attaching to an arduous and highly responsible situation. After holding this office for six years, and serving in other departments in India, he returned to England, for the benefit of his health, and published, in 1789, a pamphlet in vindication of Mr Hastings's character and services. His accurate knowledge of the political state of India eminently qualified him for the task he had undertaken; and, in this eloquent and instructive treatise, he traced with effect the splendid series of actions by which Mr Hastings had consolidated in Asia the supremacy of the British fortunes. Between this period and the date of his next production, Mr Dallas took a leading part in the debates at the India House, exhibiting on every question that came before the court of proprietors a masterly acquaintance with the principles of trade, and an extent of general information which gave him ever afterwards a decided influence in that assembly. In 1793 he published "Thoughts upon our present Situation, with Remarks upon the Policy of a War with France." The success of this work, which made a marked impression upon the public, and speedily went through several editions, was commensurate with the spirit of its execution. He also wrote, while on a visit to a relative in the north of Ireland, several treatises addressed to the inhabitants of that part of the kingdom, in which the signs of political convulsion were at the time unhappily apparent. In the same year appeared the first of his "Letters to Lord Moira, on the Political and Commercial State of Ireland," which, at the particular request of Mr Pitt, having been brought out by numbers in the "Anti-Jacobin," were afterwards embodied in a separate work.

In 1798, by patent, bearing date the 31st of July, he was raised to the dignity of a baronet of Great Britain. He sent to the press, in 1799, "Considerations on the Impolicy of treating for Peace with the present Regicide Government of France," and soon after came into parliament as representative of the borough of Newport, in the Isle of Wight. His parliamentary career, though not of long duration, was distinguished by several brilliant demonstrations of ability. Had his health permitted him to continue his legislative functions, he would doubtless have attained the highest honours of the senate, being gifted by nature with great powers of elocution. While in parliament, he published "A Letter to Sir William Pulteney, Bart., Member for Shrewsbury, on the Subject of the Trade between India and Europe." After the appearance of this publication, he resigned his seat in parliament, and passed some years in Devonshire, for the benefit of the climate. But, though comparatively retired from public life, he was a sagacious observer of political events, and availed himself of several opportunities which afforded scope for the exercise of his literary talents. His knowledge of the British interests in the East was shown in a defence, which he published in 1808, of the wars undertaken by the marquis Wellesley in the Deccan and Hindostan. Shortly before the discussions which took place, in 1813, on the renewal of the East India Company's charter, Sir George published a very interesting tract on the religious conversion of the Hindoos. It appeared anonymously, under the title of "A Letter from a Field Officer at Madras." The last, and not the least interesting of his published works, was his Biographical Memoir of his son-in-law, Sir Peter Parker, Bart., captain of his Majesty's frigate Menelaus.

Sir George married, on the 11th of June, 1788, the Hon. Catharine Blackwood, youngest daughter of Sir John Blackwood, Bart., and the Baroness Dufferin and Claneboye. He died at Brighton on the 14th Jan. 1833.

DALLAWAY, James, Vicar of Letherhead, Surrey, and of Slynfold, Sussex; was born at Bristol, Feb. 20, 1763; and having passed his youth at the grammar school of Cirencester, became a scholar on the foundation of Trinity college, Oxford. Here he made himself known by his English poetry, some of which was characterized by great sweetness and facility of versification; but the same talent, when mingled with the dangerous tinge of satire, was destined to become fatal to his early prospects. When his time had arrived to be elected fellow, his name was passed over, without any reason assigned; but the cause was generally supposed to have been some satirical verses upon an influential member of the society. With his future prospects thus blighted, he left the university, having taken his degree of M.A. Dec. 3, 1784; and went to serve a curacy in the neighbourhood of Stroud. At a subsequent period he resided in Gloucester; and about the years 1785 to 1796 he was employed as the editor of Bigland's Collections for Gloucestershire.

Mr Dallaway's first publication was "Letters of the late Dr Rundle, Bishop of Derry, to Mrs Sandys, with introductory Memoirs," 2 vols. 8vo. 1789. In the same year he was elected a fellow of the society of antiquaries; and in 1792 he published in 4to. "Enquiries into the Origin and Progress of Heraldry in England, with Observations on Armorial Ensigns." This was dedicated to Charles duke of Norfolk, E. M. a circumstance which introduced him to the notice of his grace, who was ever after his warm and constant patron. Through the duke's introduction he was appointed chaplain and physician to the British embassy at the Porte. He had previously taken the degree of Med. B. at Oxford, Dec. 10, 1794. After his return he published, under the auspices of the marquis of Bute, "Constantinople, Ancient and Modern, with Excursions to the Shores and Islands of the Archipelago, and to the Troad, 1797," 4to. In 1802 he communicated to the society of antiquaries an Account of the Walls of Constantinople; which is printed, with four plates, in the "Archæologia,"

vol. xiv. In 1792 he wrote the introduction to Naylor's "Collection of Coats of Arms borne by the Nobility and Gentry of the County of Gloucester."

On the 1st of Jan. 1797, Mr Dallaway was appointed secretary to the earl marshal, which office brought him in close connection with the college of arms, but did not constitute him a member of the corporation. He continued secretary until the death of his patron in 1815; and was re-appointed to it by lord Henry Howard, who, in 1816, was nominated deputy earl marshal; and upon his lordship's death, in 1824, a bill having passed to enable the present duke of Norfolk to execute the functions of his office in person, Mr Dallaway was a third time appointed to the official situation of secretary to the earl marshal. In 1799 the duke of Norfolk presented him to the rectory of South Stoke in Sussex; which he resigned in 1803, on his grace procuring him the vicarage and sinecure rectory of Slynfold, which is in the patronage of the see of Chichester. In 1801, in exchange for the rectory of Llanmaes in Glamorganshire, which had been given to him by the marquis of Bute, he obtained the vicarage of Letherhead, in the gift of the dean and chapter of Rochester. The two benefices of Letherhead and Slynfold he held until his death. In 1811 he also obtained the prebend of Hova Ecclesia in the cathedral church of Chichester; which in 1816 he exchanged for that of Ferring; the latter he afterwards resigned in 1826 to the late Rev. Edmond Cartwright, on that gentleman's succeeding him in the editorship of the History of Western Sussex.

In 1800 Mr Dallaway published in 8vo. "Anecdotes of the Arts in England, or comparative Remarks on Architecture, Sculpture, and Painting, chiefly illustrated by Specimens at Oxford." In 1803 he edited, in five volumes 8vo. "The Letters and other Works of Lady Mary Wortley Montagne, from her original MSS. with Memoirs of her Life." In 1806 he published in 8vo. "Observations on English Architecture, Military, Ecclesiastical, and Civil, compared with similar Buildings on the Continent, including a critical Itinerary of Oxford and Cambridge, &c., and Historical Notices of Stained Glass, Ornamental Gardening, &c." In 1816 he published a work entitled "Of Statuary and Sculpture among the Ancients, with some account of Specimens preserved in England," 8vo.; all but a small portion of which perished in the fire at Mr Bensley's printing office. Previously to this time, in the year 1811, he had been engaged, by the late duke of Norfolk, to edit, at his grace's expense, "The History of the Three Western Rapes of Sussex," for which very ample collections had been made by Sir William Burrell, and deposited in the British Museum. The first volume, containing the Rape and city of Chichester, was published in 1815; the first part of the second volume, containing the Rape of Arundel, appeared in 1819; the Rape of Bramber he relinquished to the late Rev. Edmund Cartwright, F.S.A., who published it in 1830. In 1821 he privately printed, as an accompaniment to thirteen etchings by Mrs Dallaway, two letters descriptive of the vicar's garden at Letherhead, addressed to his friend R. Duppa, Esq., a very lively and animated description of a beautiful spot. In 1823 he communicated to the society of antiquaries, "Observations on the first Common Seal used by the Burgesses of Bristol," printed (with a plate) in the "Archæologia," vol. xxi. In 1824 he published in 4to. "William Wyrcestre Redivivus. Notices of Ancient Church Architecture in the Fifteenth Century, particularly in Bristol; with Hints for Practical Restorations." An article from his pen entitled "Bristol in the Fifteenth Century," appeared in "The Retrospective Review," new series, vol. ii. in 1828; and these several papers were reprinted at Bristol, under the title of "Antiquities of Bristol in the Middle Centuries, including the Topography, by William Wyrcestre, and the Life of William Canynge." This last was an essay by Mr Dallaway, read at the Bristol institution in April, 1831. In 1826 Mr Dallaway superintended, for Mr Major, the bookseller, a finely embellished edition of Walpole's "Anecdotes of Painting," which includes Vertue's "Memoirs of the English Painters and Engravers." However accomplished in his acquaintance with art, and refined in his taste, Mr Dallaway may have been, it cannot be concealed that he was by no means calculated for either a biographical or a topographical historian; and both this work and his History of Sussex abound with marks of haste, carelessness, and inaccuracy. His last work was an extended and revised edition of the work of 1806 on "Architecture in England;" this was published early in the year 1834. His death took place on the 6th of June in the same year.

DARLINGTON; a market-town in the county of Durham, distant from Newcastle thirty-three miles, from York forty-eight. It is situated near the Skerne, a small river which falls into the Tees. It consists of several streets, diverging from a spacious square, or market-place. The principal manufactures of Darlington are carpets, and flax and worsted spinning; there are also several breweries, tanneries, roperies, and iron and brass foundries; the Skerne, in its course, turns mills for corn, &c., and propels the machinery of very extensive worsted mills; and many of the working class are employed in wool-combing, and other avocations connected with the mills. The Darlington and Stockton railway has been of great benefit to the town. Population in 1841, 11,033.

DARTFORD; a market-town in Kent, fifteen miles from London, on the great road to Canterbury. Near it are some extensive powder mills; also silk mills and paper mills. The powder manufactured here is famed for its fineness, and is much used by sportsmen. Dartford is noted as the place where Wat Tyler's insurrection commenced. Population in 1841, 5619,

DARTMOOR (*a.*); a remarkable moorish district in Devonshire, extending about twenty miles in length and eleven in breadth. The external aspect of this interesting district (the beauties of which have been sung by Carrington, *q. v.*) is extremely wild and dreary, presenting an almost endless continuation of lofty hills, craggy rocks, and narrow valleys strewed with enormous masses of granite, which some convulsion of nature in bygone days has probably severed from the surrounding eminences. Indeed, innumerable masses of stone of various dimensions lie scattered over the general surface of the moor, and those which lie on the sides of the hills, are moulded into the wildest and most impressive forms imaginable. Some of these heights rise abruptly into peaks, crowned with huge piles of stone, and are called "Tors."

There are several Druidical or Celtic remains on the moor, as the circles, the logans, and the rock

basins abundantly testify. At Drewsteignton, there is a very remarkable logan, or rocking stone, in the rocky channel of the Teign river, but its oscillating powers have nearly ceased. The base or understone of this vast mass of granite is deeply set in a bed of rocks, of which, indeed, it forms a part. The logan stone is of irregular shape, its height, or thickness, varying from six or seven to ten feet; its length is about eighteen feet; the top flattish. When rocked, it is said to have emitted an audible murmur of a peculiarly awful nature. The scenery around this monument of a remote age, is of uncommon grandeur. There are one or two other logan stones in the same neighbourhood, but of less dimensions. The only cromlech on the moor, is at Shilston, near Drewsteignton, which bears the name of the Spinster's Rock, from an absurd tradition that three spinsters, or unmarried damsels, constructed it one morning for their amusement before breakfast.

Prince Town, a small place containing about thirty houses, is worthy of notice, as being the site of Dartmoor prison, where, during the last war, a great number of prisoners were confined. From May 29, 1809, to April 22, 1814, no less than 12,679 unhappy victims were incarcerated there; about 1117 deaths occurred during that period, of which 1095 were French, and twenty-two Americans. This immense and remarkable structure is exceedingly well adapted for the object designed. Elevated at least 1400 feet above the sea, it comprises within its walls a circumference of thirty acres, enclosed on its eastern, northern, and southern directions, by a lofty wall, and on the western part, or front, which being straight, blunts the circumference, by two handsome residences appropriated to the agent and surgeon, and having between them a Cyclopean gateway, surmounted with the motto, "*Parcere subjectis.*" The first stone was laid in March, 1806. The edifice is principally composed of the granite so plentiful on the moor, and was completed at a cost of about £127,000.

A railway between Prince Town and Sutton Pool, near Plymouth, a distance of more than twenty-five miles, was opened for public use in September, 1823, at a cost of £39,983, raised principally by the influence of Sir Thomas Tyrwitt, who subscribed upwards of £3000 towards the undertaking. Several attempts have been made at various periods to plant and improve Dartmoor, and it is probable that it will be ultimately enclosed.

DAVIES, Cecilia, formerly a celebrated songstress on the Italian and German as well as the English stages. She first appeared at the Opera in London in 1773, and was considered as second to Billington only among English female vocalists. She had previously performed for some time in Italy, where she was known by the name of l'Inglesina, and even the Italians allowed that her powers were surpassed by those of Gabrielli alone. Subsequently she returned to the continent with her sister, who was an excellent performer on the harmonica; and became prima donna at the principal Italian and German theatres, and a great favourite of the empress Maria Theresa at Vienna, where she had operas written expressly for her by Metastasio, and composed by Hassee. She also taught the arch-duchesses (afterwards queens of France, Spain, and Naples) to sing and act in the dramas which were performed at court on the empress's birth-day. In her last and very advanced years she was in much poverty. Through the recommendation of lord Mount Edgecumbe, George IV. gave her a handsome present, which enabled her to pay debts which she had contracted. From the national benevolent institution, she obtained a pension of £25 per annum, which was all she had latterly to depend on, with an occasional donation from the royal society of musicians, or a trifling present from a few old friends who knew her in better times. She died in July 1836, aged ninety-four.

DAVIES, Robert, a bard of Wales, who gained at different Eisteddfodau the following silver medals and premiums:—At Caerwys, Flintshire, May 29, 1798, the Gwyneddigion medal, for the best Welsh poem on "the Love of our Country;" at Wrexham, Sept. 13, 1820, a splendid silver medal (the chain medal) and premium of £8 for the best Welsh elegy on "the Death of His Most Gracious Majesty king George III.;" at Brecon, Sept. 25, 1822, the Gwyneddigion medal for the best Welsh ode on "the old Customs and Manners of the Ancient Britons;" at Ruthin, March 1, 1825, a silver medal and premium for the best Welsh translation of the celebrated speech of his royal highness the duke of York in the house of Lords against the Roman Catholic Emancipation Bill; at Denbigh, Sept. 16, 1828, a silver medal and premium of three guineas for the best englyn on "the Air Balloon;" at Beaumaris, August 28, 1832, a splendid silver medal and premium of £15, the gift of Sir Edward Mostyn, bart., of Talacre, Flintshire, for the best Welsh poem on "David playing the Harp before Saul." For his celebrated ode on "the Courage of Caractacus against the Romans," he received a medal and premium; with several other distinguished rewards too numerous to detail. Mr Davies published an excellent Welsh Grammar, and also Diliau Bardas, &c. He died at Nantglyn, near Denbigh, Jan. 1, 1836, aged sixty-six.

DAWLISH; a town in Devonshire, beautifully situated in a valley open to the sea on one side, and on the other sheltered by richly cultivated rising grounds. The beauty of its environs and the mildness and salubrity of its air, make it a desirable resort for invalids, and it has now become fashionable as a watering place. The *parish* of Dawlish includes the townships of Cockwood, and Higher and Lower Holecomb, and the hamlets of East Town, Middlewood, Shattern, Westwood, and Lithewell. Population in 1841, 3132.

DEAD SEA, (*a.*) Most of the mysterious attributes of the Dead Sea have vanished before the light of modern science. It was believed that it was impossible for a body to sink in it, that fishes could not live in its waters, that birds were unable to fly across it, and that if they attempted to do so, they fell down instantly dead. The poisonous nature of its waters, or of the vapours which arise from its surface, have been fully disproved. The water is very strongly impregnated with salt, and consequently extremely buoyant. A traveller to the Holy Land, speaking of its effects on a companion who bathed in it, says he described the sensation as extraordinary, and more like lying on a feather-bed than floating on water. On the other hand, he found the greatest resistance in attempting to move through it; it caused his eyes to smart immensely. A piece of stick put into it required a good deal of pressure to make it sink, and when let go, bounded out again like a blown bladder. The water was clear, and of a yellowish tinge, which

might have been from the stones at the bottom, or from a hazy atmosphere; there were green shrubs down to the water's edge at one place, and nothing to give an idea of any thing blasting in the neighbourhood of the sea. The idea that no fish or other animal could exist in these waters has been refuted by recent travellers, and specimens of shells have been brought to England.

The pitch that floats on the surface of the water affords the means of subsistence to a considerable number of Arabs, who dispose of it to the Pacha of Egypt, and receive in return scanty rations of food, and a few presents, in the shape of trinkets or trifling articles of dress. The Arabs also furnish themselves with salt, which they prepare from the waters of the lake, by digging pits about the shore, filling them with water, and leaving it to be crystalized by the heat of the sun.

In ancient times bitumen, (pitch,) which is produced from this lake, was used by the Egyptians in embalming their dead. It is said by Josephus, the Jewish historian, to have risen to the surface in masses as big as the body of an ox. Dr Shaw, in his Travels, informs us, that, at the present day, the natives assure him that it rises in large hemispherical masses, which, when they come to the surface, burst with a loud explosion. This, he says, only happens near the shore, for in greater depths the eruptions are supposed to discover themselves in columns of smoke, such as are now and then seen to rise from the surface of the water. This bitumen only differs from our common black pitch, by possessing a sulphurous and fœtid smell when rubbed or burned.

Many old travellers have reported, that at times the ruins of towns are to be seen beneath the surface of the waters, but no writers that can be relied on have ascertained the fact. Philosophers were for some time unable to account for the fact, that the Dead Sea, although constantly receiving the waters of the river Jordan and of some other smaller streams, still remains at the same height; but accurate calculations have been made since that time, and it is proved, that the evaporation that takes place from the surface of so large a body of water is sufficient to account for the circumstance.

Much yet remains to be discovered with respect to the natural history of this interesting lake; but the extreme danger attending any researches in these countries, on account of the constant hostile demonstrations on the part of the native Arabs, has deterred travellers from visiting its neighbourhood.

Rae Wilson, in his Travels in the Holy Land, says,—"To the taste the waters appear decidedly to contain more salt in solution than common seawater, and in smell they resemble that of Harrowgate, or bilge-water. Crosses are made of the bitumen, which are sold at Jerusalem, and an odd idea is entertained by some persons, that the wearing of this substance serves as an antidote against the plague. Travellers should be on their guard, as there are pits near the lake that it is dangerous to approach."

The apples of Sodom, fair without and bitter within, are considered as fabulous, but Chateaubriand, the French traveller, professes to have discovered a kind of fruit answering the description: he says,—"It grows two or three leagues from the mouth of the Jordan, and is of a thorny appearance, with small tapering leaves. Its fruit is exactly like that of the Egyptian demons, both in size and colour; before it is ripe, it is filled with a corrosive and saline juice; when dried, it yields a blackish seed that may be compared to ashes."

DEAL; a town in Kent, nineteen miles S.E. from Canterbury, and seventy-two E. by S. from London. Here is no harbour, but the ample roadstead, called the Downs, between Deal and the Goodwin Sands, furnishes convenient anchorage for ships during the prevalence of particular winds; and homeward or outward bound vessels generally touch at this port, in proceeding to or from London; the former to land passengers and dispatch letters, notifying their arrival, and the latter to take in letters and provisions. Upper Deal, now a mere village, was probably of anterior origin to the present town, called, by way of distinction, Lower Deal, which consists chiefly of three streets, running parallel with the beach. Boat-building and sail-making, with other pursuits subservient to navigation, constitute almost the sole occupation of the population of Deal, which has considerably decreased since 1821. During the last war, this town was a scene of the utmost activity, from the extensive commerce carried on for the supply of provisions and maritime stores for the shipping; but the port being now less frequented, the trade has necessarily declined. Deal has long been famed as a station for pilots, whose skill, boldness, and courage, have procured them a high degree of reputation. Since the erection of floating lights on the Goodwin Sands, the gallant services of the Deal boatmen have been less in demand. This coast is defended by three castles, erected by Henry VIII., in 1539; which are Deal castle, Sandown castle on the north, and Walmer castle on the south. Here is a custom-house, and likewise a naval storehouse; and at Walmer is a naval and military hospital. Population of Deal in 1841, 6648.

DEAN FOREST is situated in the western part of Gloucestershire, between the rivers Severn and Wye, and now extends over 23,373 acres of land. It belongs to the crown, and has been long noted for the value of its timber. During the last war it supplied upwards of a 1000 loads of timber annually for the use of the navy. It also abounds in coal and iron ore: iron appears to have been wrought in the forest both by the ancient Britons and the Romans; and in the reign of Edward I. seventy-two furnaces for smelting iron are recorded to have been built there. It must formerly have been much more thickly wooded, and of much greater extent than at present; for we find that it was anciently so overgrown with oaks, as to have become a notorious harbour for robbers.

The Forest of Dean is divided into six walks, known by the names of their respective lodges or houses, built for the residence of the royal keepers: its government is nominally vested in a lord warden, who is also constable of the castle of St Briavels, formerly the residence of men of eminence in the government of England, six deputy-wardens, four verderers chosen by the freeholders, a conservator, seven woodwards, a chief forester in fee and bow bearer, eight foresters in fee, a gaveller, and a steward of the Swanimote: many of these offices have, by the lapse of time, now fallen into disuse. The population of the forest by the last census is estimated at 10,692, and is almost entirely composed of what are called free miners, who claim, and have for centuries exercised, most important mining privileges. The origin of these privileges is unknown;

but traces of the existence of the Forest of Dean miners are found in the records of our early history. They were summoned to attend the royal armies in the reigns of Edward I. and II., and a tradition still exists in the forest that the exclusive privileges were given them in consequence of their services at one of the early sieges of the town of Berwick-upon-Tweed.

DENMARK; (*a.*) The last census of the kingdom of Denmark was taken in 1834, and that of the dukedoms (Sleswic and Holstein) in 1835; and as the census was ordered to be made up every fifth year, it would in this way never have been simultaneous for the different parts of the realm. But in order to avoid this mischief, it has recently been ordered that the next census of the kingdom shall not be undertaken before 1840, and that it shall include all the possessions of the crown of Denmark.

The result of the last census in the *kingdom* showed that the population was 1,223,797 inhabitants, viz., 605,278 males and 618,519 females, having increased since the beginning of this century 32·3 per cent. The proportion of males to females was as 1000, to 1022, the same as it was thirty years ago at the census of 1801. But this proportion is much greater in other northern countries; and it is an interesting fact, that in the extreme northern countries the relative number of women seems generally to be very much greater than in countries of the temperate zone. Such is the fact in Iceland, where the proportion of females to males is almost as 1100 to 1000. In Sweden the number of females at the census of 1830, compared with that of males, was as 1076 to 1000. Among 1000 men and women existing in 1834 there were alive,—

| | | | |
|---|---|---|---|
| From birth to the age of | 10 years | 232·18 | |
| From 10 to | 20 — | 210·51 | |
| — 20 — | 30 — | 162·75 | |
| — 30 — | 40 — | 133·92 | |
| — 40 — | 50 — | 98·17 | |
| From 50 to | 60 years | 79·65 | |
| — 60 — | 70 — | 52·10 | |
| — 70 — | 80 — | 24·26 | |
| — 80 — | 90 — | 6·13 | |
| — 90 — | 100 — | 0·33 | |
| Above | 100 — | 0·008 | |

Among 1000 men there were 337 married, 632 unmarried, and 31 widowers. Among 1000 women there were 327 married, 587 unmarried, and 86 widows. Among 1000 men and women, 205, or one-fifth, lived in towns, and 795, or four-fifths, lived in the country.

In the *dukedoms* of Sleswic and Holstein the population was 773,788, viz., 385,635 males, and 388,153 females. The increase since 1803 was 28·5 per cent., the interval being 32 years. The proportion between males and females was as 1000 to 1007. Among 1000 individuals existing in the duchies in 1835 there were alive:—

| | | | |
|---|---|---|---|
| From birth to the age of | 10 years | 243·69 | |
| From 10 to | 20 — | 210·30 | |
| — 20 — | 30 — | 157·03 | |
| — 30 — | 40 — | 136·74 | |
| — 40 — | 50 — | 101·45 | |
| From 50 to | 60 years | 75·17 | |
| — 60 — | 70 — | 49·60 | |
| — 70 — | 80 — | 21·15 | |
| — 80 — | 90 — | 4·53 | |
| — 90 — | 100 — | 0·29 | |
| Above | 100 — | 0·007 | |

Among 1000 men there were 330 married, 632 unmarried, and 38 widowers. Among 1000 women there were 352 married, 558 unmarried, and 90 widows. Among 1000 men and women, 174, or rather more than one-sixth, lived in towns, and 826, or five-sixths, lived in the country.

In the *kingdom* the proportion which the deaths bore to the population in the whole period, from 1801 to 1834, was as 1 to 41; but this proportion was much more favourable from the peace (1814) until 1829, being during that period as 1 to 47. In the years 1829 and 1831, the mortality was extremely great. Though Denmark was exempted from the infection of the cholera during those two years, the mortality was as great as in the countries where that plague raged, a part of the kingdom having been scourged by an ague, which seemed very contagious. The number of deaths in those two years amounted to 74,361, averaging in each 37,181, while upon an average of the seven preceding years it only amounted to 24,575, the increase being equal to more than one-half. Out of 1000 deaths there were,—

| | In the whole Period from 1801 to 1834. | In the Years 1824 to 1833, taken alone. |
|---|---|---|
| From birth to the age of 10 years | 381·61 | 353·92 |
| — 10 — 20 years | 40·93 | 42·83 |
| — 20 — 30 — | 55·53 | 56·16 |
| — 30 — 40 — | 59·42 | 61·93 |
| — 40 — 50 — | 68·44 | 73·35 |
| — 50 — 60 — | 87·06 | 92·07 |
| — 60 — 70 — | 118·82 | 121·70 |
| — 70 — 80 — | 117·96 | 126·18 |
| — 80 — 90 — | 59·93 | 63.86 |
| — 90 — 100 — | 7·63 | 7·69 |
| Above 100 — | 0·39 | 0·31 |
| Unknown | 2·28 | 0·00 |

DESIGN, SCHOOL OF. A grant was made in the parliamentary session of 1836, for the purpose of affording instruction to those engaged in the preparation of designs for the various branches of the manufactures of this country. To carry out this important object, a "School of Design" was established, under the sanction of government, at Somerset house, in the rooms lately occupied by the royal academy, and which was opened on the 1st of June, 1837. The instruction given in this school includes light and shade, colour, modelling, perspective, &c. An opportunity is thus afforded to young persons having a taste for the fine arts, of acquiring a knowledge of the principles and modes of changing and adapting forms of ornament, aided by light, shade, and colour, so as to produce new and elegant combinations; and of acquiring also a knowledge of the chemistry of colours, on which the laws of harmonious colouring are based. Should the experiment of this "School of Design" be a successful one, we may anticipate that a class of practical artists, far higher in education and taste than our present artisans, will be employed in our arts and manufactures, producing a most beneficial action on the social taste and feeling of the entire community.

DEVIL'S BRIDGE, situated in Cardiganshire, in South Wales, between Hafod and Aberystwith, not far from the bottom of the Plinlimmon. It is a single arch, of between twenty and thirty feet span, thrown over another arch, which crosses a tremendous chasm. According to tradition, the lower arch was constructed by the monks of the neighbouring abbey, called Strata Florida abbey, about the year 1087, but this is not correct, as the abbey itself was not founded till 1164. The country people, in superstitious days, deeming it a work of supernatural ability, gave it the strange name by which it is now generally known. Giraldus mentions having passed over it in 1188, when travelling through Wales with Baldwin, archbishop of Canterbury, to preach in favour of the Crusades. The upper arch was built over the other at the expense of the country, in 1753, and the iron balustrades were added by Mr Jones in 1814. The lower arch may be distinctly viewed by looking over the upper bridge; but the whole scene is so

enveloped in wood, that the depth is not perceived; and many an incurious traveller has passed the Devil's bridge without distinguishing its circumstances from an ordinary road. The cleft over which these two bridges extend has evidently been enlarged, and was perhaps originally produced by the incessant attack of the impetuous river Mynach on the solid wall of rock. In order to view the scenery of this romantic spot, the visiter should first cross the bridge, and then descend by the right of it to the bottom of the aperture, through which the Mynach drives its furious passage, having descended from the mountains about five miles to the north-east. The effect of the double arch is picturesque; and the narrowness of the cleft, darkened by its artificial roof, increases the solemn gloom of the abyss. On regaining the road the second descent must be made by passing through a small wood, at the distance of a few yards from the bridge, to view the four successive falls from the point of a rock in front.*

DEWSBURY; a market-town in the west riding of Yorkshire, thirty-four miles S. W. from York. It is a place of great antiquity, and was the residence of the Saxons during the heptarchy. It has a very fine appearance from the Wakefield road, where it suddenly breaks upon the sight. The principal manufactures carried on here, are in woollen cloths, blankets, and carpets. This town, from its situation, possesses many commercial advantages, being seated on the Calder, which with the canals affords communication with Liverpool, Manchester, &c. Population of the parish of Dewsbury in 1841, including the townships of Dewsbury, Soothill, Clifton-cum-Heartshead, and Ossett, 25,806.

DIAMOND, (*a.*) In former times, all the diamonds that were known were brought from different parts of India, particularly from the famous mines of Golconda, near Hyderabad, the present capital of the Deccan, in Hindostan; the islands of Molucca and Borneo have also produced many valuable stones: they are always found in an alluvial soil, generally gravel, resting on granite, and not imbedded in any other substance, but appearing like small pebbles with the surface flattened in many parts. The diamond mines of Golconda are now so far exhausted, as to be considered not worth the expense of working. The diamonds which are now brought to Europe are chiefly from the Brazils. When Brazilian diamonds were first imported, the circumstance excited the jealousy of the dealers in East Indian gems, and a prejudice was unjustly raised against the produce of these newly-discovered mines; and although subsequent trials have proved the diamonds of Brazil to be fully equal to those of the East, so difficult is it to remove a prejudice when once it is raised, that to the present day the diamonds of Brazil are considered by some people to be of an inferior kind. The feeling was so strong that in order to obtain a fair price for their stones, the merchants of Brazil were in the habit of sending their cargo in the first instance to Goa, that it might be re-imported from that place into Europe, as the production of the eastern world. Formerly, nearly the whole of the trade in diamonds was monopolized by the Dutch, and at present the cutting and polishing of these gems is in general performed in Holland, on account of the lower price of labour; but the English workman is nevertheless considered much superior.

The art of cutting, splitting, sawing, or polishing diamonds requires great skill, practice, and patience. "It is seldom," says Mr Mawe, "that the same workman is a proficient in all these branches, but he generally confines himself to one. In cutting and polishing a diamond, the workman has two objects in view; first, to remove any flaws or imperfections that may exist in the stone, and secondly, to divide its surface into a number of regularly-shaped polygons. The removal of flaws seems to be the most material object, since the smallest speck in some particular parts of the stone is infinitely multiplied by reflection from the numerous polished surfaces of the gem. When the shape of the rough stone is particularly unfavourable, the workman has to resort to the hazardous operation of splitting. The rule by which the proper place is discovered at which to apply the requisite force is made a great mystery of: but, perhaps, like many other mechanical arts, it depends as much on the dexterity acquired by constant practice, as on scientific knowledge; and in that case the workman himself, although a perfect adept in his business, would find himself unable to impart the knowledge he was in possession of. When the direction in which it is to be split is decided on, it is marked by a line cut with a *sharp*:† the stone is afterwards fixed by strong cement in the proper position in a stick, and then by the application of a *splitting-knife*, the section is effected by the application of a smart blow."

Sometimes, when the section must cross the crystallized structure of the gem, recourse must be had to *sawing*. This is performed as follows: The diamond is cemented to a small block of wood which is fixed firmly to a table, and a line is made with a sharp where the division is intended to take place, which is afterwards filled with diamond-powder and olive-oil: the sawing is then commenced, and if the stone is large, the labour of eight or ten months is sometimes required to complete the operation. The saw is made of fine brass or iron-wire, attached to the two ends of a piece of cane or whalebone, the teeth being formed by the particles of diamond-powder, which become imbedded in the wire as soon as it is applied to the line. The cutting the facets on the surface of the rough stone is a work of labour and skill; the polishing is performed in a mill, which is an extremely simple machine. Diamonds are cut (generally on account of the shape of the rough stone) in various ways, and assume different names in consequence; as a brilliant, a rose, a table, and a lasque diamond: of these the brilliant is the most splendid, from the brilliancy and number of its reflections and refractions. See Mr Maw's Treatise on Diamonds and Precious Stones.

DINGWALL; a borough-town in Ross-shire, Scotland, situated near the western extremity of the Cromarty Firth, distant from Edinburgh 178 miles, from Inverness, twenty. It possesses a small harbour, near which formerly stood the castle of the family of Ross, a fragment of which building is all that now remains. The surrounding country is beautiful and highly cultivated. Population of town and parish in 1841, 2100.

* There is a Devil's bridge in Switzerland, of which notice is taken in the body of the work. There are other Devil's bridges among the Alps, the Apennines, and the Pyrenean mountains.

† When a small diamond is broken into four parts, the edge of each quarter is called a sharp.

DISTILLATION, (*a.*) Every liquid which is susceptible of fermentation will yield alcohol, or *spirits of wine*, by distillation, after the first or vinous stage of that chemical action has taken place. Now as all liquids which contain starch or sugar of any kind will ferment if the fermenting principle is present, the juices of all vegetables containing farina or saccharine matter may be employed to obtain alcohol from.

The peculiar flavour of the different spirits obtained from these vegetable substances, depends on the presence of some foreign matter, as an essential oil, &c., for the alcohol or basis is the same, from whatever source it may be obtained.

The process of distillation is founded on the principle of different degrees of caloric being requisite to convert different liquids into vapour. Thus, if water and alcohol are mixed and exposed to a moderate heat, sufficient to volatilize the spirit,—but not to convert the water rapidly into steam,—and the vapour arising from the mixture be collected and condensed in a separate vessel, the liquid will be found to be *stronger*, or to contain more alcohol in proportion to the water, than that from which it was obtained.

The instrument contrived to effect this separation is called a *still*. It consists of a large copper or boiler, with a vaulted *head*, from which rises a funnel-shaped tube, which, being bent downwards, terminates at some distance from the fire of the boiler, in a leaden, copper, or tin tube, made into a spiral form of many turns, and hence called the *worm*. This tube is enclosed in a tub, or vat, capable of holding water, and the end of the worm terminates in a tap, which passes out of the vessel at the bottom.

When the liquid to be distilled is put into the boiler and is heated, the vapour produced passes through the head and into the worm, and, by the coldness of the water in the tub, is condensed into a liquid, which may be drawn off at the tap. This liquid product is called *singlings*, and is again returned to a still, and the process repeated, the resulting condensed liquid being each time stronger, or containing less water, till the spirit is obtained of the requisite purity, or at what is termed *proof*. All spirit for drinking remains diluted with a large proportion of water. Instead of re-distilling the products, after a certain number of times, other chemical processes are employed for the purpose of separating the alcohol from the water, and from any bad-flavoured essential oil which may have been distilled over from the original liquid. These processes are generally termed the *rectification* of the spirit, and vary for every different liquid employed.

There is pretty good evidence for supposing that no less a person than Osiris, the great god of Egypt, was the *first distiller of whiskey* on record; for the Egyptians had, from time almost immemorial, a distillation or brewage from barley, called by the Greeks barley-wine, not inferior, they say, in flavour, and superior in strength, to wine. Allusion is made to this liquor in several passages of ancient writers. The poor people of Egypt drank it instead of wine, and were wont to intoxicate themselves with it, just as our poorer people do with whiskey. It seems also to have been no stranger to the Hebrews; for reference is certainly made to it in the Old Testament, under the name of "strong drink," stronger than wine, and resorted to by determined drinkers for the sake of inebriation. Among the Celtæ in Spain and France, it seems to have been common as a substitute for wine; Polybius speaks of a certain Celtic king of part of Iberia, or Spain, who affected great court pomp, and had in the middle of his hall golden and silver bowls full of this barley-wine, of which his guests or courtiers sipped or quaffed at their pleasure—a custom which, it is said, for many a century prevailed among his Celtic descendants, the reguli chiefs of our Scottish Highlands. The antiquity of this distillation is proved by the Egyptian tradition which ascribed its invention to Osiris. It may not improbably be supposed that the Egyptians communicated the invention to the Babylonians and Hebrews, who transmitted it northwards to the Thracians and Celtæ of Spain and Gaul, who, in their migrations north-westwards, carried it along with them into Ireland and the Scottish Highlands. This barley-wine was called by the Greeks *βρυτον*—(Qu. brew?)—which, in all likelihood, was its Egyptian or Celtic name. Aristotle entertained an extraordinary notion of this potation. Those intoxicated with it, he says, fall *on the back part of their heads;* whereas those drunk with wine fall *on their faces!*

*Good Scotch whiskey* is made from malt alone; and the following account of the process of preparing the malt for distillation, we have obtained from a person who has had extensive practical experience in Scottish distilleries.

The malt, having received every justice from the maltster, is bruised upon cylinders, and the quantity intended to be mashed is put into the mash pan, an eight hour's notice having previously been given to the officer of excise. Water is then added; the officer being always present. This is the most important part of distillation. If the proper quantity of water be not put in, according to the weight of the grain, and that quantity at a proper heat, it is impossible to extract the proper quantity of worts at the required gravity. Soft or moss water is best for mashing with, or extracting the wort from the malt. The water ought to be kept in a boiling state three or four hours before it is applied to the grain. The weight of the grain being ascertained—(we shall take a medium weight, say nineteen stones per boll or six bushels, and the gravity of the worts to be taken from the mash tun 60°, or to contain sixty pounds of saccharine matter,)—the water is then poured upon the malt at a heat of from 145° to 175° according to the season of the year. In summer, 145° will do, but in winter it may be proper to raise the water to the heat of from 174° to 180°. Now, if grain be of the above weight, and the time of mashing be in the month of November or March, which are the best seasons of the year for mashing, bring your water to the heat of 148°; then for every boll or six bushels, give 135 to 145 gallons of water at the above heat; then instantly commence stirring your mash tun with oars, and continue to do so for about fifty minutes, after which let the tun settle for about forty-five minutes; then turn the discharge cock of the tun, and the worts will drain into the under-back. The worts on being tried should now prove about sixty-two or sixty-three pounds weight saccharometer. These being the first worts, are either pumped up to the coolers, or left in the under-back if it is large enough to contain the second mash also. Should the first worts be pumped up into the coolers, instead of remaining in the under-back, the officer upon the first visit must

try the strength of them in the coolers; and if he find them of a higher weight than that of three per cent. above the declared gravity, that constitutes a fraud on the part of the distiller. The mash tun is now prepared for the *second* mash, in order to extract the second worts. In this case the water should be brought up to the heat of from 154° to 160°, and about 160 gallons of water should be added to every boll or six bushels of malt. The mash tun should now be stirred for about an hour and three-quarters to two hours, allowing it to settle about half an hour, before draining the worts into the under-back. The strength of the worts of the second mash should be only some few degrees lower than that of the first mash, and when mixed together, should form the required gravity. When the worts in the coolers have cooled to about 60°, they are let down into the fermenting tun, and the distiller immediately tenders a declaration to the excise officer of the dip and strength of said tun, it being the officer's duty to check said declaration. After the second worts have been drained off, a third water is run into the mash tun, to extract the sparge. This sparge or wort is usually brought off the mash tun at from about twenty-five to thirty pounds weight; it is then pumped up into the copper, and boiled. It must be always kept in a boiling state, or it would sour, and of course be of no use. If the mash tun be stirred by machinery, instead of by oars, then twenty-four or twenty-five minutes will be sufficient for the first mash, and half an hour will be enough to let it stand; and so in proportion with the second and subsequent mashes.

*The making of bub.*—Bub is composed of wort, beer and porter yeast. A notice must be given to the excise officer four hours before commencing the operation; also the quantity must be declared, and the time when it is to be made. The wort taken to make the bub is from the first worts: if sixty gallons is to be made, forty may be worts, five gallons ale yeast, and ten gallons porter yeast, which in a state of fermentation is applied to the tun. This bub cask or tun is surveyed by the officer on every visit, and the dip and strength ascertained when in operation. The bub must be added in the presence of the officer, and on no account can it be above the declared *gravity*

*Fermentation.*—When the worts are cooled to as near 60° as possible, they are let down from the coolers into the fermenting tun, or tuns for fermentation, at which time the officer is to ascertain the dip and strength, and insert both in his book. He must also see the bub added, which of course will create an increase in the dip of the tun, for which cause he must make another survey before leaving the place. The tun being thus set, fermentation will take place in the course of eight or ten hours; afterwards the tun begins to gather a head, and the heat increases from 60° to 90° and will perhaps be only three pounds down on the instrument. At this period the officer ought to be very careful of his survey, as the thermometer shows such a heat as more than counterbalances the degrees upon the strain that the tun has attenuated down to. By his next visit, it will be considerably down, perhaps, if the fermentation be quick, to forty-eight or fifty pounds, in which case it will come down eight or ten pounds every four or six hours, until the fermentation comes to eight or five pounds. If it still retains the heat with a little head, it will in all likelihood come down to water, which is excellent work. When the tun has come to from thirty-nine to thirty-three pounds weight, fresh porter yeast ought to be added, about one or one and a half gallons to the 100 gallons of wash in the tun, as the strength of the bub first added is in a great measure gone by that time. When the tun comes to from nineteen to fifteen pounds weight, it ought to get the last yeast; the quantity applied of porter yeast at this time is about three-fourths of a gallon to the 100 gallons of wash; and if at the time the fermentation be slow, the hatch must be kept quite closed until heat is gathered.

*English gin*, or *Geneva*, is procured from raw barley, oats, and malt, mixed together in certain proportions. Every particle of soluble matter is obtained from these ingredients by repeated mashings. The worts are then made to ferment by the addition of yeast, as for brewing, but the fermentation is continued till all the saccharine matter is converted into alcohol. This fermented liquor is called *wash* by the distillers. The grains are put into the still along with the wash, and the first product being redistilled, the spirit obtained is rectified. The peculiar flavour is given by infusing a few juniper-berries and some hops.

The Dutch employ barley, malt, and rye meal only to distil their Hollands from.

*Irish whiskey*, *potsheen*, or *potteen*, owes its peculiar flavour to the mode in which the usual processes are conducted, rather than to any peculiarity in the grains. The barley is wetted with bog-water, in order to excite germination, and the malt is dried with turf instead of coal. The malt is mixed with about one-fourth of raw corn, and the mashing is made in a tun, the bottom of which is covered with young heath and oat-husks, to supply the place of a false one. When the wash begins to boil in the still, the fire is suddenly quenched, and the spirit which runs, though weak, is of the true flavour. The *singlings* are distilled again and yield the real potteen.

*Rum* is a spirit obtained from molasses, or the fluid which drains from the crystallizing sugar; the molasses are diluted with water, fermented and distilled. In the distillation acetic ether passes over, and communicates a strong disagrecable flavour to the spirit, which must be subsequently got rid of. The leaves of different plants are put into the still to give a pleasant taste to the rum.

*Brandy* is distilled from any wines, but the best is procured from weak French wines, which are unfit for exportation. In consequence of the quantity of this spirit consumed, every mode of economizing labour and expense is had recourse to: the principle of these is the adoption of a peculiar mode of distillation, which merits description here, and by which fuel is saved. Instead of a single still there are a series of copper vessels, which we shall distinguish as 1, 2, 3, &c. A tube rises from the top of 1, and is bent down again to pass through the top of 2, to near the bottom of that vessel; from the top of 2 another similar tube communicates in the same way with 3, and 3 again communicates with 4, and so on. These tubes are open at both ends, but are soldered air-tight to the holes in the vessels through which they pass, so that there is no opening to the external air by means of them. Each of the vessels being half filled with the wine to be distilled, the fire is applied to the first only, the vapour which passes over is condensed by, and mixed with, the wine in the second, and as this vapour, by the nature of distillation,

contains more alcohol than water, the wine in the second vessel is strengthened by the addition, while it is heated by the caloric disengaged from the vapour; and since a less degree of heat is sufficient to convert this stronger liquid into vapour, that which rises from it contains a yet greater proportion of alcohol to the water. This vapour from 2 is condensed again in 3, the wine in which is thus strengthened more than that in 2 was, and the heat imparted to 3, though less than that which 2 acquired from 1, is yet sufficient to distil the stronger wine contained in 3. The action is continued, if necessary, to four vessels, but usually three are sufficient, and the vapour from the last is condensed in a worm in the usual manner, only instead of water, the tub containing the worm is filled with wine, which getting heated by the process, is pumped back into the first vessel, and is therefore made to boil sooner, and fuel is thus still further economised. This ingenious process was the invention of an uneducated man of the name of Adam, and goes by his name.

Brandy, whatever wine it may have been obtained from, is at first colourless; in France a good deal is used in this state, but the greater part is coloured by different methods. Cognac brandy is put into new oaken casks, and chips of the same wood are also added; the oak communicates a yellow tinge to the spirit, and probably some flavour likewise.

The various liqueurs known by the names of *eau-doré*, *maraschino*, *kirsche-wasser*, &c. consist of brandy, flavoured by the essential oil of different aromatic plants, and sweetened by sugar. *Arrack* is a name given in the east to spirits generally, and has hence been employed here to designate very different liquors, as that obtained from rice, the cocoa-tree, &c.

The fermented liquids obtained from potatoes, beet, carrot, turnips, the fruit of the potato, service-tree, apples, cherries, &c. have been employed with different degrees of success for obtaining alcohol from. In Kamtschatka, grass is made use of for this purpose, and many plants might, doubtless, be employed with advantage, if it were not for the severity of our excise laws; but no friend to his species could wish to see the use of spirits as a *drink* increased in any country.

DOUGLAS, D., an eminent botanist and enterprising traveller, was born at Scone, near Perth, in 1799, of humble but respectable parents. At a very early age he was sent to school, but seems to have had less relish for book-learning than for fishing and bird-nesting and collecting flowers,—a taste which soon ripened into a fondness for the pursuits and objects of natural history, generally, but in particular of botany. This led to his employment in the gardens of the earl of Mansfield, at that time under the superintendence of Mr Beattie, to whom he was bound as an apprentice for seven years. In this situation he devoted his whole heart and mind to the attainment of a thorough knowledge of his business, and acquired that decided taste for botanical pursuits which he so ardently followed in after life. From the gardens at Scone he was removed to those of Sir Robert Preston, at Valleyfield, near Culross, where his botanical taste was much improved by the rich collection of exotic plants cultivated there, and by the contents of a valuable botanical library to which he was kindly permitted access. After remaining two years at Valleyfield, he succeeded in gaining admission to the botanical garden at Glasgow, where he applied to his professional duties with so great a diligence and success as to gain the friendship of all who knew him, and particularly of Dr (now Sir W. J.) Hooker. He was in consequence recommended by that gentleman to the London Horticultural Society, as a botanical collector; and in 1823 was despatched to the United States, where he procured many fine plants, and enriched the Society's collection of fruit-trees. On his return, he was sent in the following year to explore the botanical riches of the country in North-West America, adjoining the Columbia river, and southward towards California. After a long and tedious voyage of above eight months, during which he omitted no opportunity of gratifying his taste for objects of natural history both at sea and the various coasts and islands on which he occasionally landed, he reached the Columbia river on the 7th of April, 1824, and lost no time in commencing his researches. The manner in which he performed his duty to the Horticultural Society cannot be better exemplified than by referring to the vast collections of seeds which from time to time he transmitted home, along with dried specimens, beautifully preserved, and now forming part of the Herbarium in the garden of the Society at Chiswick. Of the genus *Pinus*, he discovered several species, some of which attained to an enormous size. His name, indeed, is associated with all the rare and beautiful plants lately introduced from North-West America, and extensively distributed not only in Britain, but over Europe. To him botanists are indebted for the elegant *Clarkia*, the different species of *Pentsemons*, *Lupines*, *Œnotheras*, *Ribeses*, and a host of other ornamental plants.

On the 20th of March 1827, Mr Douglas started from the Columbia for England, by way of Hudson's bay, traversing in his route the rocky mountains, the "Grand Dividing Ridge" of the mighty continent of North America, at the height of 16,000 or 17,000 feet above the level of the sea. At the company's settlements he had the happiness to meet Sir J. Franklin, Dr Richardson, and Mr Drummond, and arrived in England on the 11th of September. About the beginning of October 1829, he again set out, under the patronage, partly of the horticultural society, and partly of the government, for North America, and arrived at the Columbia on the 3d of June 1830. Our limits will not permit us to follow him in his important botanical researches, and in perilous incidents which would have shaken the courage of the most stout-hearted. Suffice it to say, that after having again visited North California, he made an excursion to the Sandwich islands. His death took place at the age of 36, in the island of Hawaii, on the road to Hido, the residence of the missionaries; and the particulars of the sad event are given in a letter from these gentlemen. It would appear that he lost his way; and his body was found in a pit excavated for the purpose of entrapping wild cattle, and into which a bullock had previously fallen. The face was covered with dirt; the hair filled with blood and dust, the head dreadfully cut, and the limbs mangled and bruised. It was naturally concluded, and the conclusion was confirmed by medical gentlemen who inspected the body, that his death was caused by wounds inflicted on him by the captured bullock.

DOURO, a river of the Peninsula, called Rio Douro, or Golden River, probably from the quan-

tity of gold dust found in former times among its sands. The Douro rises in the province of Soria in Spain, in a chain of mountains near the village of Almarza, in the kingdom of old Castile; the city of Soria, the capital of the province, is watered by it; Valladolid, Toro, and Zamora, are also on its banks. A few leagues from the last-mentioned place, it changes its course from a westerly to a southern one; and from the village of Miranda becomes a boundary between Spain and Portugal, for the distance of sixty miles. When above Sobradilla, it resumes its westerly course, and falls into the sea at Oporto. The lightness of the soil and the extreme velocity of this river have created an immense bar at its mouth; and the opposition of the current of the ocean, which is also very strong, causes a surf of so dangerous a character as frequently to delay ships from entering the harbour for five or six weeks together. For any species of navigation except that of the wine boats from the interior, the Douro is of no use beyond the city of Oporto.

The *Passage of the Douro*, in 1809, was one of the most brilliant achievements of the British army during the Peninsular war. The French, in their retreat to Oporto, had broke down the bridge. All the boats and barges in the river were secured on the Oporto side, and guards were stationed at the most convenient points; all the artillery and baggage remaining in Oporto, were sent off along the intended line of retreat, and Soult himself proposed to stay only two days, thinking that with a river like the Douro in his front, he was safe from attack from the British for that short space of time. The Douro is more than 300 yards wide at Oporto, and its banks on either side are steep and rocky. Just before it enters the city, it sweeps round the base of a lofty height on the south bank, which is crowned by the buildings and gardens of the convent of S. Agostinho da Serra, and which completely screens the city from all view of the upper part of the river. Beneath the shelter of this hill the whole of the British force was assembled in one mass. Sir Arthur Wellesley mounted to the summit, and scanned every object on the bank occupied by the enemy. Few French troops were to be seen, and there was every indication of the enemy's approaching departure. Sir Arthur felt that he must be quick, or the prize would escape him, yet how to pass the river was the question. A large unfinished building, standing alone, and surrounded by a high stone wall, running down to the water's edge, soon fixed his attention, as affording a good position for those who should land first, until they could be supported; here then he resolved to cross.

"A boat," says colonel Napier, "was soon obtained; for a poor barber of Oporto, evading the French patroles, had, during the night, come over the water in a small skiff. This being discovered by colonel Waters, a staff-officer of a quick and daring temper, he and the barber, and the prior of Amarante, who gallantly offered his aid, crossed the river, and, in half an hour, returned, unperceived, with three or four large barges. Meanwhile eighteen or twenty pieces of artillery were got up to the convent of Serra; and major-general John Murray, with the German brigade, some squadrons of the 14th dragoons, and two guns, reached the Barca de Avintas, three miles higher up the river, his orders being to search for boats, and to effect a passage there also, if possible. Some of the British troops were now sent towards Avintas, to support Murray while others came cautiously forward to the brink of the river. It was ten o'clock; the enemy were tranquil and unsuspicious; and an officer reported to Sir Arthur Wellesley, that one boat was brought up to the point of passage;—"*Well, let the men cross,*" was the reply; and, upon this simple order, an officer and twenty-five soldiers, of the Buffs, entered the vessel, and, in a quarter of an hour, were in the midst of the French army. The building was thus gained without any alarm being given, and every thing was still quiet in Oporto; not a movement was to be seen; not a hostile sound was to be heard: a second boat followed the first, and then a third passed a little higher up the river; but scarcely had the men from the last landed, when a tumultuous noise of drums and shouts arose in the city; confused masses of the enemy were seen hurrying forth in all directions, and throwing out clouds of skirmishers, who came furiously down upon the building. The citizens were seen making signals from their houses, and the British troops instantly crowded to the bank of the river. The troops in the unfinished building maintained their ground; the Douro was quickly covered with boats, which the exulting citizens eagerly brought; and as Murray's troops were seen descending the right bank from Avintas, a loud shout in the town, and the waving of handkerchiefs from all the windows, gave notice that the enemy had abandoned the lower part of the city. The French hastily retreated, and as they passed along by the seminary wall, a deadly fire of musketry from within, tore open terrible gaps in their confused and massy columns. In the meanwhile Sherbrooke's men had crossed the river into the town, and hastening up the steep streets with 'blessings breathed upon them, and shouts of triumphant gratulation and convulsive laughter, mingled with the tears and prayers that greeted them,' came upon the enemy's rear, just as the drivers of five pieces of French artillery had pulled up hesitatingly, appalled by the line of musketry which they had to pass;—a volley from the British stretched most of the artillerymen on the ground, and the rest abandoned their guns. The British were now in complete possession of the town, and the enemy fleeing in all directions."

DOVEDALE; a vale or glen in Derbyshire, remarkable for its romantic beauty. The most frequented entrance to this highly picturesque glen, is about a mile from the road leading from Ashbourne, (a pleasant town in the immediate vicinity,) to Buxton, near the remarkable detached cone-shaped hill, called Thorpe Cloud, which forms quite a "landmark" to a wide district. The descent towards the dale is through a wild and narrow chasm, one side of which is composed of naked beetling rocks, rising to a vast height, whilst the other presents a striking contrast of bushy precipices and green herbage. The dale takes its name from the Dove, a torrent stream, which rises from a lofty hill, called Axedge, near Buxton, from which spring four rivers, that run in opposite directions. Proceeding in a southerly direction, it hurries through Dovedale, filling the glen with its melody. The length of Dove-dale is nearly three miles, and it is in no part more than a quarter of a mile wide, while in some places it almost closes, scarcely leaving room for the passage of its narrow river. On the right, or Derbyshire side of the dale, the rocks are more bare of vegetation than on the opposite or Staffordshire side, where they are

thickly covered with a fine hanging wood of various trees and odoriferous shrubs and plants. The frequent changes in the motion and appearance of the transparent Dove, which is interspersed with small islands and little waterfalls, contribute to diversify the scenery of this charming spot; while the rugged, dissimilar, and frequently grotesque and fanciful appearance of the rocks, gives to it that peculiar character by which it is distinguished from every other in the kingdom.

DOVER, Lord. George James Welbore Agar Ellis, afterwards lord Dover, was born on the 14th of January, 1797. He was the son of lord Clifden by Lady Caroline Spenser. He completed his education at Christ Church, Oxford; where, at his examination, in 1816, he was placed in the second class, and took the degree of M. A., April 21st, 1819. At the general election, in 1818, he was returned for the borough of Heytesbury; and thus, at the age of twenty-one, took his seat in the House of Commons. In the parliament of 1820 he sat for Seaford; in that of 1826 for Ludgershall; and in that of 1830 for Oakhampton. During the whole of this period he distinguished himself as an active member of the legislature; seldom, indeed, taking a very conspicuous part in debates upon great political questions: but, while he maintained his principles upon these, in a way not to be misunderstood, applying himself with more congenial and prominent zeal to every subject which involved the cause of learning, the fine or useful arts, charities, and the improvement of the people. Thus, in 1824, when the sum of £57,000 was appropriated to the purchase of Mr Angerstein's pictures, as the foundation of a national gallery, Mr Agar Ellis was the first person who suggested this illustrious design, and one of the most earnest and enlightened of its advocates, whose energy conduced to the accomplishment of the measure. On the formation of the administration, in November, 1830, he was selected by earl Grey to succeed viscount Lowther as chief commissioner of woods and forests. This office, however, he resigned only two months after, on account of his delicate health.

Reverting to his patronage of the fine arts, lord Dover was the steady and generous friend of our native school. One of his first purchases was the magnificent picture of the Queen's Trial, by Hayter, so interesting and valuable for the large number of portraits it contains. The works of Lawrence, Collins, Jackson, Leslie, Newton, and other eminent contemporaries, were added to the treasures of his collection. In 1822, he prepared a "Catalogue Raisonné of the principal Pictures in Flanders and Holland," which was printed, but not published. Lord Dover's literary studies were chiefly directed to the investigation of history, particularly that of his own country. His first published production was "The true History of the State Prisoner, commonly called the 'Iron Mask,' extracted from Documents in the French Archives." Following M. Delort, he demonstrated that mysterious personage to have been count Hercules Anthony Matthioli, secretary of state to Charles the third duke of Mantua. In 1828, he published "Historical Inquiries respecting the Character of Edward Hyde, Earl of Clarendon, Lord Chancellor of England;" in which he adopted that view of the distinguished personage in question, which puts his personal qualities in strong opposition to his excellence as an historian, and places his moral character, like that of lord Bacon, far below his great talents. It was remarkable that his opinion of lord Clarendon's character was seconded, shortly after, by the late earl of Ashburnham's exposition of the conduct of Hyde towards his ancestor, the Jack Ashburnham of the unfortunate Charles I. In 1829, lord Dover edited, in two octavo volumes, "The Ellis Correspondence," consisting of letters written between January, 1666, and December, 1688, by various persons to his ancestor, Mr John Ellis, who was secretary of the revenue at Dublin; and illustrative of the same period as the diaries of Evelyn and Pepys. In 1831, he published a Life of Frederick the Great, King of Prussia, in two vols. 8vo. His last literary task was that of editing the Letters of Horace Walpole to Sir Horace Mann. A small volume of Lives of the most eminent Sovereigns of modern Europe, written for the instruction of his son, was published after his death. Besides these works, he was the writer of some able articles in both the Quarterly and Edinburgh Reviews, as well as in the Annuals, Magazines, and other periodicals.

In 1832, on the resignation of the bishop of Salisbury, lord Dover was elected president of the royal society of literature; of which, nearly from its foundation, he had been an active friend, and a diligent member of the council. By way of an anniversary address, his lordship prepared for the society an historical memoir; the subject of that for 1832 was the death of King Richard II.: and of that for 1833 the Gowrie Conspiracy. The latter he did not read in person, his health being then so impaired as to prevent his attendance.

Lord Dover received his title of peerage by patent, dated June 16th, 1831. He married, March 7th, 1822, lady Georgiana Howard, second daughter of the earl of Carlisle, and sister to the present duchess of Sutherland, lady Cavendish, &c. His death took place at Dover House, Whitehall, on the 10th of July, 1833. He left three sons and three daughters.

DRAKE, Nathan, M. D., an honorary associate of the royal society of literature, &c. was born in York, on the 15th Jan. 1766. He graduated at Edinburgh in 1789; and after a short residence at Billericay in Essex, and at Sudbury in Suffolk, finally settled as a physician at Hadleigh in the latter county, in 1792, where he practised forty-four years. In 1807 Dr Drake married Miss Rose of Brettenham in Suffolk, by whom he had several children.

The walk of literature adopted by Dr Drake was that of light essays, and ingenious illustrations of our standard literature; though his first attempt as an author was a medical treatise, published while he was a resident at Edinburgh. His later contributions to that science consists of papers in different medical periodicals. Of his literary works, by which his name is more generally known, the following is a correct list:—"The Speculator," a periodical paper, written in conjunction with Dr Edward Ash, 8vo. 1790. "Poems," 4to. 1793. "Literary Hours," first edition, 1 vol. 8vo. 1798. 4th edition, 3 vols. 8vo. 1820. "Essays illustrative of the Tatler, Spectator, and Guardian," 3 vols. 8vo. 1805; second edition, 1812. "Essays illustrative of the Rambler, Adventurer, Idler, and other periodical papers, to the year 1809," 2 vols. 8vo. 1809. "The Gleaner, a Series of Periodical Essays, selected from authors not included in the British Essayists,' 4 vols. 8vo. 1811. "Shakespeare and his Times, including the Biography of

that Poet; Criticisms on his Genius; a new Chronology of his Plays; a Disquisition on the object of his Sonnets; and a History of the Manners, Customs, and Amusements, Superstitions, Poetry, and elegant Literature of his age," 1817, 2 vols. 4to. "Winter Nights," 2 vols. 8vo. 1820. "Evenings in Autumn; a series of Essays, narrative and miscellaneous," 1822, 2 vols. 8vo. "Noontide Leisure," 2 vols. 8vo. 1824. "Mornings in Spring," 2 vols. 8vo. 1828. "Memorials of Shakspeare," 1828. In addition to the above, Dr Drake left a MS. ready for the press:—"A selected Version of the Psalms, with copious Notes and Illustrations." The papers illustrative of our periodical essayists are at once amusing and interesting, from the variety of information they afford touching that popular department of our national literature; and the "History of Shakspeare and his Times" throws much light on the manners, customs, and amusements, superstitions, poetry, and elegant literature of that age. The papers contained in the last eight volumes of Essays, from the "Winter Nights" to the "Mornings in Spring," inclusive, are of a very miscellaneous character,—critical, narrative, biographical, and descriptive. They are pleasing and elegant in their style, and evince no inconsiderable delicacy and discrimination of taste, unvarying kindness of heart, and purity of moral feeling. Their most striking characteristics are, perhaps, grace and amenity, rather than force or originality. The amiable character of their author is, in fact, impressed on all his productions; and in that character, as developed and displayed in his writings, exists their greatest charm. In his criticism Dr Drake seemed only to look at what was beautiful or pleasing, and in his intercourse with his fellow creatures his candour and charity were equally conspicuous. It may indeed be said of him with perfect truth, that in a professional and literary career of near half a century, amid all the turmoils of party strife and contentious rivalry, he so "pursued the even tenor of his way," as never to have lost by estrangement a single friend, or made one enemy. As a medical practitioner he was deservedly respected and esteemed by his professional brethren for his courtesy and skill, and yet more endeared to all whom he attended by the urbanity of his manners and the unaffected kindness of his heart. Dr Drake died at Hadleigh, in Suffolk, June 7, 1836.

DREW, Samuel, A. M., late editor of the "Imperial Magazine," was born of humble parents on the 3d of March, 1765, in an obscure cottage in the parish of St Austell, in the county of Cornwall. When rather more than ten years old, his father bound him an apprentice to a shoemaker, in the adjoining parish of St Blazey. The treatment he received while an apprentice being such as his disposition could not brook, he left his master when about seventeen, and refused to return. His father compounded for the residue of the term, and procured him employment, and further instruction in his business, at Millbrook, near Plymouth, in which place and neighbourhood he continued about three years. At the close of the year 1784, or commencement of 1785, when about twenty years of age, he came to St Austell, to conduct the shoe-making business for a person who was occasionally a book-binder. With this employer he remained above three years; and then commenced business in that town on his own account.

In the year 1784-5, the late Dr (then Mr) Adam Clarke was appointed to the East Cornwall circuit, of which St Austell was the central station, and the residence of the preachers. The preaching of Mr Clarke and his colleagues aroused Mr Drew's attention to the subject of personal religion; and his abilities being appreciated by Mr Clarke and his coadjutors, they were soon called into exercise; for, within a brief period, he was appointed to the charge of a class, and employed as a local preacher. In this field (except as a class-leader, which office he resigned into other hands) he continued to labour until a few months before his decease.

In April, 1791, Mr Drew married, being then in a creditable way of business. He was not yet an author, but had obtained a name for skill and integrity as a tradesman, and was held in respect by his neighbours. In 1799, he published Remarks on Paine's "Age of Reason," which first brought him before the public as an author. The Remarks having been several years out of print, were republished, in duodecimo, with the author's corrections and additions, in 1820. In 1802, he published an "Essay on the Immateriality and Immortality of the Soul," which brought him into honourable notice beyond his native country. This book was dedicated to the Rev. John Whitaker, whose patronage had, in a great measure, drawn him forth from obscurity. A copy of the work reaching Bristol soon after its appearance, Mr Richard Edwards, then a bookseller there, wished to possess the copyright. It was sold to him for a very trifling sum; nor did Mr Drew ever express regret at the apparently unprofitable bargain. This copyright he lived to resume, and again to dispose of, with his latest emendations, to Messrs Fisher, Son, and Jackson, of London, by whom the fifth English edition has recently been published. The work has gone through several editions in America, and has been translated into French, and published in France.

The favourable reception which had been given to the Essay on the Soul, prompted the author to further mental exertion. His thoughts, by a natural process, passed from a consideration of the Soul to that of the Body; and a determination to investigate the evidences of a General Resurrection was the result. From this investigation, the subject of Personal Identity was inseparable; and on these topics he recorded his thoughts till the end of 1805. At this time, he took a survey of his work, but was so much dissatisfied with it, that he threw the whole aside as useless and half resolved to touch it no more; nor did it appear in print till 1809. It was then, like the Essay on the Soul, published by subscription, and the copyright sold to Mr Edwards. A second edition of this treatise appeared in 1822.

In May, 1805, he entered into an engagement with the late Dr Thomas Coke, which wholly detached him from the pursuits of trade. Hitherto literature had been the employment of his leisure hours. From this time, it became his occupation. About two years previously to this, he had undertaken, in a course of familiar lectures, to instruct a class of young persons and adults in English grammar and composition. A similar course of lectures, with the addition of physical geography and astronomy, was delivered by him in 1811. In 1820, he published a "Treatise on the Being and Attributes of God," in two vols. 8vo. This performance, which he himself considered as by far his best, obtained for him additional reputation,

and, in connection with his preceding essays, it procured him the distinction of M. A. from the university of Aberdeen. Previously to the publication of this "Treatise," Mr Drew appeared as the biographer of his friend Dr Coke. This life was published by the Methodist Book-room, in 1816, in an octavo volume; and before its appearance, he had undertaken the compilation of a history of his native county, in two quarto volumes. This was not a work of his own suggestion, or one in which he had any personal interest beyond his literary reputation. It was the speculation of a provincial bookseller, who had already published a prospectus of the work, as coming from another pen. The gentleman who had engaged to be the compiler died ere he had got beyond the dedication; and Mr Drew, as his successor, found himself thrown entirely upon his own resources. This work occupied his attention during the greater part of two years; but the publisher becoming bankrupt before its completion, Mr Drew suffered a heavy pecuniary loss; and the public had to wait till 1824 before the concluding portion made its appearance from the press. In the beginning of 1819, when Messrs Nuttal, Fisher, and Co. of Liverpool, were about to establish the "Imperial Magazine," Mr Drew, at the recommendation of Dr Clarke, was engaged as its editor. This led to his removal from St Austell to Liverpool, and from thence to London, where he continued to discharge the duties of his responsible situation until the beginning of March, 1833. Besides the editorship of the "Imperial Magazine," Mr Drew had the superintendence of all the works issued from the Caxton press; and the proprietors of that establishment bear honourable testimony to his abilities, his industry, and his moral worth. He died on the 29th March, 1833.

DROITWICH; a borough town in the county of Worcester, six miles from Worcester, and 118 from London. It has from a very early period been famed for its salt springs or *wiches*. The brine pits are in the midst of the town, which stands on the side of a narrow valley, at the bottom of which runs the small river Salwarp. The prevailing rock around Droitwich is a fine grained calcareo-argillaceous sand-stone, of a brownish red colour, with occasional spots and patches of a greenish blue; and the rock-salt and brine-springs of Cheshire appear to be situated in strata of a similar nature. Before the year 1725, the usual depth of the pits was about thirty feet, but at that period an enterprising speculator resolved to try the effect of boring to a much greater depth, and after perforating a bed of gypsum of considerable thickness the workmen found a copious salt-spring strongly impregnated, which suddenly rising, overflowed the mouth of the pit. This discovery occasioned the ruin of the proprietors of the old pits, which were no longer worth working. The pits now open have been sunk from thirty-five to fifty-three feet through the superior strata, and from one hundred to one hundred and fifty feet through the stratum of gypsum, immediately beneath which is a river of brine flowing over a bed of rock-salt. The head of the spring is obviously on higher ground than the outlet, as the brine rises spontaneously to the surface. One ounce of brine contains one hundred and forty grains and a half of muriate of soda (common salt), two grains and a quarter of sulphate of lime (gypsum), two grains and a half of sulphate of soda, and a trace of muriate of magnesia. From Droitwich to the Severn a canal has been constructed, navigable for vessels of sixty tons burthen, by which most of the salt here manufactured is conveyed for sale in different parts of the kingdom, and the barges commonly return laden with coal, of which large quantities are consumed in the salt-works. This borough formerly returned two members to parliament. It now, in conjunction with the several parishes of Dodderhill, Hampton-Lovett, Doverdale, Salwarp, Martin-Hussingtree, Oddingley, Hadsor, Hindlip, Himbleton, Elmbridge, the Moreway end division, and the Broughton division of Hanbury, and the extra-parochial places called Crutch and Westwood park, returns one member. The franchise, formerly confined to twenty-eight, is now enjoyed by about 311. Population in 1841, 2832.

DRYBURGH. The ruins of Dryburgh abbey, now rendered sacred as the resting-place of Sir Walter Scott, are situated in Berwickshire, on the north bank of the Tweed, about four miles from Melrose. In the early part of the sixth century, a monastery is said to have been founded here by St Modan, one of the first preachers of Christianity in Scotland. St Modan was abbot in 522, but it is supposed, that after his death the community was transferred to Melrose, since no subsequent mention is made of the abbey till about the year 1150, when the present structure was founded by Hugh de Morville, constable of Scotland, and lord of Lauderdale, the district in which it is situated.

In 1322, a considerable portion of the abbey was burnt and destroyed by the soldiers under Edward II., in revenge for certain insults offered them by the monks, who imprudently rang the church bells on their departure. King Robert Bruce contributed largely to its restoration, but it is doubtful whether it was afterwards rebuilt either in its original style or magnificence. In 1545, Dryburgh abbey was again plundered and burnt by the English, under the earl of Hertford. At the dissolution in 1587, (at which period the lands and revenues were annexed to the crown,) it was erected into a temporal lordship and peerage, by James IV. of Scotland, who granted the abbey and its demesnes to Henry Erskine, created lord Cardross, the second son of John, earl of Mar, lord high treasurer of Scotland, and Mary, daughter of Esme Stewart, duke of Lennox, the direct ancestor of David Stewart Erskine, earl of Buchan, elder brother of Thomas lord Erskine, lord chancellor, and uncle to the present proprietor, Sir David Erskine.

The ruins are completely overgrown with foliage; evergreens may be seen flourishing amidst the solemn desolation of a roofless apartment; in others, the walls are clothed with ivy to their summits; and on the top of some of the arches, trees of considerable growth have sprung up, which add to the adornment of the venerable edifice. The age of these trees is a certain proof of the antiquity of its destruction. The original design of the abbey was cruciform, divided in the breadth into three parts, by two colonnaded arcades; the transepts and choir have all been short; a part of the north transept which is still standing, is called St Mary's aisle, and is a beautiful specimen of early English Gothic architecture. The fine Norman arch, originally the western doorway, is enriched with ornaments in general use at the period the abbey is said to have been founded; the sculpture is chaste, and unaffected by time, and it may, perhaps, be considered the most striking feature of the ruins. The last resting-place of Sir Walter Scott is a

small spot of ground in an area formed by four pillars, in one of the ruined aisles, which belonged to his family. His uncle Robert Scott, and his lady, are, however, the only members of the family who lie interred there. From the limited dimensions of the place, the body of the author of Waverley, has been placed in a direction north and south, instead of in the usual manner, east and west.

DUDLEY; a market-town in the county of Worcester, twenty-six miles N.N.E. from Worcester. It consists of one long street, with a church at each end. It is well built, paved, and lighted with gas. It has considerable manufactures of nails, hardware, and glass, and in the neighbourhood are extensive coal mines and quarries of ironstone and limestone. A canal has been cut from hence that communicates with the Birmingham and Worcester canal, by means of which the trade of this place has been greatly improved. The family of Ward derive the title of earl from this town, which was a borough, and sent members to parliament in the reign of Edward I., but had lost the privilege, until it was renewed by the reform act, 3, William IV. The number of electors is about 800. It is within the jurisdiction of the county magistrates. The market-day is Saturday. Population of town and parish in 1841, 31,232.

DUDLEY, Right Hon. John William Ward, Earl of, of Castle Dudley, county of Stafford, was born August 9, 1781, the only child of William the third viscount, by Julia, second daughter of Godfrey Bosville, of Thorpe and Gunthwaite, in Yorkshire, Esq. His education was remarkably private. He was removed from his father's mansion, in Park Lane, to a small house at Paddington, where he was entrusted to the care of the Rev. Mr James, a fellow of New College, Oxford, and a separate establishment was maintained for his service. The degree of M. A. was conferred upon him at Oxford, at a subsequent period, Jan. 14, 1813. Immediately after his coming of age, he was, at the general election of 1802, elected M. P. for Downton; and he very soon distinguished himself in the House of Commons as a young man of extraordinary talents. A vacancy occurring in the representation of Worcestershire, he accepted the Chiltern Hundreds, Aug. 1, 1803; and was elected without opposition for that county. At the election of 1806, however, lord Lyttleton was returned in his room; but at that of 1807, Mr Ward was chosen for Wareham. In 1812, he was returned for Ilchester. Of the parliament of 1818 he was not a member; in 1820 he was elected for Bossiney; and on the 25th of April, 1823, he succeeded his father in the peerage. On the formation of Mr Canning's administration, lord Dudley and Ward was appointed secretary of state for foreign affairs, and sworn a member of the privy council, April 30, 1827. On the 24th of Sept. in the same year, he was raised to the rank of an Earl by the titles of Earl of Dudley and Viscount Ednam, the latter being the name of an estate which he had recently purchased in Roxburghshire, and the birthplace of the poet Thomson. In May, 1828, he resigned the secretary-ship. Early in 1832, he gave a celebrated *Olla Podrida fête* in Park lane, in honour of Miss Littleton, now Viscountess Newark. He died on the 6th March, 1833.

The earl of Dudley was a man of powerful talents, varied accomplishments, and a most generous disposition; but his manners had always been so much marked by eccentricities, that few were astonished by the unhappy circumstances under which he was withdrawn, about a year before his death, from society. He experienced from that period a succession of paralytic attacks, and sunk latterly into a state of perfect childhood. One of the earliest symptoms of his lordship's malady was that of asserting himself to be married. He is said to have expressed great affection and solicitude for his imaginary countess. We are not aware of any literary production of his lordship that has found its way to the press, except a well-known article in the "Quarterly Review," on the Life and Character of J. Horne Tooke, with whom Lord Dudley had been intimate in his early youth. His parliamentary speeches, and his despatches, while secretary for foreign affairs, under Mr Canning, lord Goderich, and during a brief part of the Wellington administration, were always distinguished by a classical elegance of style. All the earl's titles expired with him, except the barony of Ward; which devolved on the Rev. Humble Ward, rector of Himley, Staffordshire.

DULWICH; (*a.*) a hamlet in the parish of Camberwell, county of Surrey, four and a half miles S. from London. It is chiefly remarkable for its college, founded in 1619 by Edward Alleyn, a dramatic performer in Shakspeare's time, who endowed it with property which produces at present about £14,000 annually. The college was founded for a master, warden, four fellows (three of whom must be divines, and the fourth an organist,) six poor brethren, as many poor sisters, twelve scholars, six assistants, and thirty out-members. The scholars are received at the ages of from six to eight years, and educated until they attain their fourteenth year, when they are apprenticed; some were formerly educated for the university, which is now discontinued, although, according to the statute, there ought to be four. The master and warden must be of the family of the founder, or in default of persons so qualified, must bear the same surname, or that of Allen. On the decease of the master, the warden succeeds him, and a new warden is chosen by lot from among the candidates properly qualified. The two senior fellows must be masters of arts, and they officiate as preachers; and the juniors, who must be graduates, and in holy orders, act as school-master and usher. The poor brethren and sisters are chosen as vacancies occur, from the out-members, who are taken from the parishes of St Botolph's, Bishopsgate, St Giles's, Cripplegate, and St Saviour's, Southwark, ten from each parish. The buildings of the college, which exhibit what has been termed the Elizabethan style of architecture, were erected from a design of Inigo Jones. The chapel is open to the inhabitants of the village. The altar-piece has a fine painting of the Ascension. At the south end of the college a noble picture-gallery was recently erected, for the reception of a valuable collection of paintings by Italian, Flemish, and English masters, which was left to the college by Sir F. Bourgeois, who died in 1811, bequeathing also the sum of £12,000 to complete the establishment. A free school was founded here in 1741, by the master of the college, and endowed by him with property producing a rental of £200 per annum, for the education of poor children belonging to the hamlet or living within a mile of it. The school-house is a handsome building facing the college. A medicinal spring was discovered here in 1739, besides which there are several others in the neighbourhood.

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